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BIBLIOGRAPHY OF ETHYLENE DICHLORIDE

By

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By W. A. GERSDORFF, *Assistant Chemist, Insecticide Division, Chemical and Technological Research, Bureau of Chemistry and Soils*

INTRODUCTION

In 1795, the Dutch chemists, Deimann, Van Troostwyk, Bondt, and Louwrenburgh, first reported the preparation of a liquid from chlorine and ethylene. This liquid was known for some years as the "oil of the Dutch chemists," and by various other names until it was given its present name of ethylene dichloride, or, more properly, 1, 2, or s-dichloroethane. In English it has been called, besides "oil of the Dutch chemists," elayl chloride, and ethylene chloride. In addition to the equivalents of these names, the Germans and the French have called it Chloräther in Maximum von Chlor, Ätherinchlorid, Oel des oelbildenes Gases, chlorwasserstoffsaures Chlorätheras, Chlorkohlenwasserstoff, Aethenchlorür, Chloräthylen, hydrocarbure de chlore, and chlorhydrate de chlorure d'aldehydene (ou d'acetyle).

Ethylene dichloride, $CH_2Cl.CH_2Cl$, is a colorless liquid with an odor hardly distinguishable from that of chloroform. It has the following physical properties (Mellon Institute): Boiling point, 83.5° C. at 760 millimeters; melting point, −36°; flash point (Abel-Pensky), 12–13°; density at 20/4°, 1.2569; specific heat, 0.3054 at 30°; latent heat of evaporation, 157.5 British thermal units per pound at 0°.

Ethylene dichloride is a good solvent for oils, fats, waxes and certain alkaloids, gums, resins, and rubber. It is extremely stable in the presence of water, alkalies, acids, and active agents, such as free chlorine, sulphuryl chloride, and sulphur monochloride. It is resistant to oxidation. It does not corrode metals even in the presence of water at the boiling point. At ordinary temperatures, it burns with such difficulty that when ignited the draft of combustion will blow out the flame.

The physiological action of ethylene dichloride is comparable to that of chloroform.

The chief use of ethylene dichloride has been that of a solvent, and as such it is of great value. Recently, it has been shown to be

of value for insecticidal purposes. Cotton and Roark in 1927, and Hoyt in 1928 obtained 100 per cent kills with a 3 : 1 ethylene dichloride-carbon tetrachloride fumigant. The advantages of this fumigant are: Effectiveness, relative cheapness, simplicity in use, ease of removal, absence of fire hazard, and safety for human beings.

Ethylene dichloride may now be obtained in the pure state at reasonable cost.

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Ethylene dichloride (Chlorkohlenwasserstoff) and water in sunlight form acetaldehyde (essigäther).

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ETHYLENE DICHLORIDE AS AN EXTRACTIVE SOLVENT. Indus. and Engin. Chem. News Ed. 4 (22): 1. 1926. [Also in Chem. Ztg. 51: 32. 1927.]

Physical and chemical properties of ethylene dichloride and its uses are given. The boiling point at 760 mm. is 83.5° C.; the melting point is −36°; the density at 20/4° is 1.2569; the specific heat at 30° is 0.3054; the latent heat of evaporation at 0° is 157.5 British thermal units per pound. Ethylene dichloride has high solvent action on lard, cocoa butter, butter, stearic acid, peanut oil, corn oil, etc., waxes, wool grease, and certain alkaloids, gums, resins, and rubber. It may be used in the cleaning or degreasing of furs. It is extremely stable in the presence of water, alkalies, acids and active reagents, such as free chlorine, sulphuryl chloride, and sulphur monochloride. It is quite resistant to oxidation. It has some anesthetic properties, but causes no deleterious heart action and produces no serious after effects.

ALLEN, S. J. (3)
ON THE SECONDARY RADIATION PRODUCED FROM SOLIDS, SOLUTIONS, AND PURE LIQUIDS, BY THE β-RAYS OF RADIUM. Phys. Rev. 29: 177–211. 1909.

Experimental results with ethylene dichloride are given: Molecular weight, 99; density, 1.280; secondary radiation (water as 100, thin layer) 284; relative absorption of β rays, 400 (water as 100). Comparisons are made with other halides.

ALOFORMIA. (4)
PREPARATION OF HALOGEN DERIVATIVES OF METHANE OR SIMILAR ARTIFICIAL GAS MIXTURES. French Patent 586582, issued March 30, 1925. [Abstract in Chem. Zentbl. (2) 1925: 1223. 1925.]

A method for the preparation of chlorine derivatives of ethane, including ethylene dichloride, is described.

ANS, J. D', and KAUTZSCH, J. (5)
DIE CHLORIERUNG DES ÄTHYLCHLORIDS. Jour. Prakt. Chem. (n. F.) 80: 305–314. 1909.

When approximately equimolecular quantities of chlorine and ethyl chloride are condensed in a quartz vessel cooled by a mixture of ether and solid carbon dioxide and are exposed to the rays of a Heraues mercury lamp, the product yields about 10 per cent ethylene dichloride. When 1.5 mols of chlorine to 1 of ethyl chloride are used the product does not contain ethylene dichloride. It is more difficult to chlorinate ethylidene chloride in light than ethylene dichloride; hence the behavior of these two substances under these conditions is just the reverse of their behavior when chlorinated by means of a halogen carrier.

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BEITRAG ZUR KENNTNIS DER HALOGENSUBSTITUTION IN DER FETTREIHE. Finska Kemistsamfundets Meddel. Sept. 16, 1916 [Abstract in Chem. Zentbl. (1) 1919: 221. 1919.]

Ethylene dichloride is one of a number of substances upon which a method of moist chlorination is tried.

ATKINSON, E. (9)
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Glycol monoacetate may be prepared from ethylene dichloride and potassium acetate.

BADISCHE ANILIN—& SODA—FABRIK. (10)
VERFAHREN ZUR DARSTELLUNG VON ALS SCHMIERÖLE, HARZE UND DERGLEICHEN VERWENDBAREN KOHLENWASSERSTOFFEN. German Patent 326729, issued in 1920.

The reaction of xylol and ethylene dichloride in the presence of aluminum chloride is described.

BAEKELAND, L. H. (11)
SOME ASPECTS OF INDUSTRIAL CHEMISTRY. Jour. Indus. and Engin. Chem. 6: 769–778. 1914.

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SULLE FORMULE ESPRIMENTI LA TENSIONE DEI VAPORI SATURI IN FUNZIONE DELLA TEMPERATURA. Atti. Accad. Gioenia Sci. Nat. Catania (4) 2: 1–43. 1890. (Ethylene dichloride, p. 33.)

The vapor pressure of ethylene dichloride is studied.

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The freezing of mixtures of benzene and ethylene dichloride is studied.

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The heats of mixing are determined for mixtures of ethylene dichloride with benzene, toluene, and ethylene bromide.

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A newly developed equation for the depression of the freezing temperatures is tested on a number of binary mixtures, including ethylene dichloride-benzene mixtures over wide ranges of concentration. Experimental results are found to agree with the equation.

BAUER, K. H., and LAUTH, H. (17)
AETHYLENDICHLORID ALS LÖSUNGSMITTEL. Chem. Umschau Geb. Fette, Oele, Wachse u. Harze 35: 86–2. 1928.

Physical properties of ethylene dichloride are given, and its chemical and physiological behavior are studied. The rectified sample examined had d^{20} 1.250, flash point (Abel-Pensky) 12° to 13°, and 78 per cent of it boiled between 82.8° and 83.3°. Its rate of evaporation at 17° is comparable with that of trichloroethylene and six times as fast as that of benzine (boiling point 76° to 143°). It mixes in all proportions with methyl and ethyl alcohols, acetone, ethyl acetate, benzene, toluene, petroleum ether, ligroin, benzine, pyridine, carbon tetrachloride, trichloroethylene, pentachloroethane, and cyclohexanol. It is 0.5 per cent soluble in water, and itself dissolves 0.1 per cent of water at 18° to 19°. The qualitative solubilities of a number of oils, fats, waxes, and cellulose esters in ethylene dichloride and in alcoholic mixtures of it are tabulated. Ethylene dichloride shows great stability on boiling with water. It is as stable to neutral, acid, or alkaline permanganate as carbon tetrachloride and much more stable than trichloroethylene, benzine, and benzene. As compared to these solvents it is as stable to neutral, but not to acid dichromate. It is comparable with chloroform in its physiological action.

BAUER, W. (18)
ETHYLENE DIHALIDES. U. S. Patent 1540748, issued June 9, 1925.

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The equilibrium of benzene-ethylene dichloride mixture is studied.

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DECOMPOSITION OF SOME HALOGENATED SULPHIDES, AND THE NATURE OF THE "POLYMERIC" ETHYLENE SULPHIDES. Jour. Chem. Soc. [London] 1927; 1803–1809.

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THE NITRATION OF DIPHENYLETHYLENEDIAMINE. Jour. Chem. Soc. [London] 115: 576–578. 1919.

The preparation of the base by the interaction of aniline and ethylene dichloride is described. The reaction is much less violent than with the bromide.

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TOTALE OBERFLÄCHENENERGIE UND CHEMISCHE KONSTITUTION. Ztschr. Phys. Chem. 84: 475–497. 1913.

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ZUR KENNTNISS DES AETHYLENCHLORIDS UND AETHYLIDENCHLORIDS. Ber. Deut. Chem. Gesell. 35 (3): 3524–3528. 1902.

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The reaction of ethylene dichloride with the sodium derivative of ethyl malonate in alcoholic solution is studied.

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ÜBER EINEN NEUEN WEG ZUR UMWANDLUNG VON PRIMÄREN DIAMINEN IN GECHLORTE AMINE UND IN DICHLORIDE. Ber. Deut. Chem. Gesell. 38: 2340–2348. 1905.

Small amounts of ethylene dichloride are formed when the products of the action of phosphorus pentoxide on symmetrical dibenzoylethylenediamine are distilled, even under diminished pressure. Ethylene dichloride is identified by the formation of 1.2-diphenoxyethane when boiled with sodium phenolate in alcoholic solution.

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HALOGEN-ALKYLIERTE, AROMATISCHE AMINE (IV. MITTEILUNG). Ber. Deut. Chem. Gesell. 52: 1716–1724. 1919.

Ethylene dichloride does not react in the least with methylaniline under the same conditions as those for the reaction with ethylene chlorobromide.

BROOKS, B. T., and HUMPHREY, I. (41)
THE PREPARATION OF ETHYLENE GLYCOL. Jour. Indus. Engin. Chem. 9: 750–751. 1917.

Ethylene dichloride is used in preference to the bromide in the preparation of ethylene glycol because of its ease of preparation from ethylene and the cheapness of chlorine. Very pure ethylene dichloride is prepared if the chlorine-ethylene reaction mixture is kept cold, since the heat of reaction allows the formation of large quantities of trichlorethane. The gases should not be dried, since dry ethylene and chlorine may coexist for a long time without reacting. The method of preparation of ethylene glycol consists in heating a mixture of ethylene dichloride, sodium formate, and methyl alcohol to 165° C. in a suitable autoclave.

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DICHLORINATED ETHYLENE HYDROCARBONS FROM OIL GAS. U. S. Patent 1231123, issued June 26, 1917.

After a preliminary fractional liquefaction and rectification of the oil gas, the mixture consisting chiefly of ethylene and propylene is passed together with chlorine into a solvent (possibly the reaction products) in which chlorination takes place.

BROOKS, B. T. and SMITH, D. F. (43)
CHLORINATING OIL-GAS. U. S. Patent 1235283, issued July 31, 1917.

Oil gas is chlorinated by passing it through sulphuryl chloride kept at 10° to 40°. The chlorohydrocarbons, including ethylene dichloride, are recovered by distillation after the residual sulphuryl chloride is washed out with a dilute aqueous solution of an alkali.

BROWNLEE, R. H. (44)
DENTIFRICE. U. S. Patents 1645791; 1645792; and 1645793, issued October 18, 1927.

Ethylene dichloride may be included in a dentifrice as the chief active ingredient.

BRÜHL, J. W. (45)
DIE BEZIEHUNGEN ZWISCHEN DEN PHYSIKALISCHEN EIGENSCHAFTEN DER KÖRPER UND IHRER CHEMISCHEN CONSTITUTION. II. MITTEILUNG. Ber. Deut. Chem. Gesell. 13: 1119–1130. 1880.

The molecular refraction of ethylene dichloride is given, and the atomic refraction of chlorine is ascertained from this value. Comparisons are made.

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DIE BEZIEHUNGEN ZWISCHEN DEN PHYSIKALISCHEN EIGENSCHAFTEN ORGANISCHER KÖRPER UND IHRER CHEMISCHEN CONSTITUTION. III. MITTEILUNG. Ber. Deut. Chem. Gesell. 13: 1520–1535. 1880.

Ethylene dichloride is one of a number of compounds used in the study of the relations of physical properties to chemical constitution.

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DIE CHEMISCHE CONSTITUTION ORGANISCHER KÖRPER IN BEZIEHUNG ZU DEREN DICHTE UND IHREM VERMÖGEN DAS LICHT FORTZUPFLANZEN. ZWEITER THEIL. Liebigs Ann. Chem. 203: 1–63. 1880.

Physico-chemical data on ethylene dichloride are given, including the following:

$$d\frac{20}{4}=1.2521;\ \mu_\alpha,\ 1.44189;\ \mu_D,\ 1.44432;\ \mu_\beta,\ 1.45024;$$

$$\mu_\gamma,\ 1.45528;\ P\left(\frac{A-1}{d\frac{20}{4}}\right),\ 34.12;\quad P\left(\frac{\mu_\alpha-1}{d\frac{20}{4}}\right),\ 34.94.$$

Atomic refraction of Cl, Br, and I is unchangeable.

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DIE CHEMISCHE CONSTITUTION ORGANISCHER KÖRPER IN BEZIEHUNG ZU DEREN DICHTE UND IHREM VERMÖGEN DAS LICHT FORTZUPFLANZEN. DRITTER THEIL. Liebigs Ann. Chem. 203: 255–285. 1880.

The refraction coefficient of ethylene dichloride is greater than that of ethylidene chloride.

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ÜBER DEN ZUSAMMENHANG ZWISCHEN DEN OPTISCHEN UND DEN THERMISCHEN EIGENSCHAFTEN FLÜSSIGER ORGANISCHER KÖRPER. Sitzber. Akad. Wiss. Wien, Math. Naturw. Kl. 84 (2): 817–875. 1881. (Ethylene dichloride, p. 837, 845.) [Also—Die chemische Constitution organischer Körper in Beziehung zu deren physikalischen Eigenschaften. Vierter Theil. Liebigs Ann. Chem. 211: 121–178. 1882. (Ethylene dichloride, p. 138, 145.)]

Physico-chemical properties of ethylene dichloride are studied.

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Refraction data for ethylene dichloride are given and discussed.

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SOLUZIONI SOLIDE FRA COMPOSTI A CATENA APERTA. Gaz. Chim. Ital. 28 (1):277–283. 1898. [Also in Rend. Acc. Lincei (5) 7 (1): 166–171. 1898.]

Ethylene dichloride forms solid solutions with ethylene dibromide.

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SOLUZIONI SOLIDE E MISCELE ISOMORFE FRA COMPOSTI A CATENA APERTA, SATURI E NON SATURI. Rend. Acc. Lincei (5) 8 (1): 454–463. 1899.

Ethylene dichloride forms solid solutions with ethylene dibromide.

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ÜBER DIE EIGENSCHAFTEN DES ÄTHYLENCYANIDS (BERNSTEINSÄURENITRILS) ALS LÖSUNGS UND IONISIERUNGSMITTEL. Ztschr. Elektrochem. 11: 860–862. 1905.

Ethylene dichloride forms a solid solution with ethylene cyanide, as the molecular depression resulting is small. The molecular depression, molecular weight, and lowering of the freezing point values are anomalous, pointing to the belief that the compounds are isomorphous.

BRUNNER, H., and EIERMANN, K. (55)
UEBER DIE EINWIRKUNG HALOGENSUBSTITUIRTER ALIPHATISCHER VERBIN DUNGEN AUF PHENYLHYDRAZIN. Ber. Deut. Chem. Gesell. 31: 1406–1416. 1898.

Ethylene dichloride and phenylhydrazine react readily, precipitating phenylhydrazine hydrochloride.

BUCHERER, H. (56)
PREPARATION OF DERIVATIVES OF SOLUBLE, RESINOUS CONDENSATION PRODUCTS FROM PHENOLS AND ALDEHYDES. French Patent 520319, issued July 10, 1920. [Also British Patents 148139 and 148366, issued July 9, 1920.]

The action of ethylene dichloride and phenols on the soluble phenol-aldehyde resins is given.

BÜRKI, F. (57)
BEITRÄGE ZUR KENNTNIS DES NEUMANN-KOPP'SCHEN GESETZES Helvetica Chim. Acta 2: 27–38. 1919.

The Neumann-Kopp law dealing with the constancy of the atomic heat of different elements is tested for various compounds, one of which is ethylene dichloride.

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VORLÄUFIGE MITTHEILUNG ÜBER SCHWEFELCYANÄTHYLEN. Liebigs Ann. Chem. 96: 302–303. 1855. [Also in Jour. Prakt. Chem. 67: 314; and Chem. Zentbl. 1856: 191. 1856.]

Ethylene dichloride (Chloräthylen) and potassium thiocyanate form ethylene thiocyanate and potassium chloride.

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UEBER DIE CONSTITUTION DER KOHLENWASSERSTOFFE UND DIE CHEMISCHE NATUR DERSELBEN. Liebigs Ann. Chem. 100: 219–242. 1856.

The formation of ethylene thiocyanate from ethylene dichloride and potassium thiocyanate is described and discussed. A reaction to form glycol which Wurtz found successful with ethylene diiodide proved unsuccessful with ethylene dichloride and dibromide.

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UEBER SPEC. WÄRME DER GASE UNTER GLEICHEM DRUCK UND BEI GLEICHEM VOLUME. Liebigs Ann. Chem. 115: 301–313. 1860.

The specific heat of ethylene dichloride vapor is studied.

BUTLEROW, A. (61)
UEBER DIE CONSTITUTION EINIGER UNGESÄTTIGTER KOHLENWASSERSTOFFE. Ztschr. Chem. (n. F.) 6: 523–527. 1870.

The author tried to obtain propylene by treating mixtures of ethylene chloride, bromide, iodide, and methylene iodide with copper and water, or sodium, sodium amalgam, granular zinc, moist or dry zinc dust. In each case only ethylene was obtained. The different splitting of ethylene chloride and ethylidene chloride was noted, the former losing both chlorine atoms and the latter but one.

CAHOURS, A. (62)
DE L'ACTION DU CHLORE ET DU BROME SUR LE PROPYLÈNE, L'ÉTHYLÈNE ET LEURS HOMOLOGUES. Compt. Rend. Acad. Sci. [Paris] 31: 291–295. 1850.
The action of chlorine on ethylene to produce ethylene dichloride is described. Some of the relationships of ethylene dichloride are discussed.

CAPSTICK, J. W. (63)
ON THE RATIO OF THE SPECIFIC HEATS OF SOME COMPOUND GASES. Roy. Soc. [London] Proc. 57: 322–324. 1894–95.
Ethylene dichloride is one of a number of compounds whose specific heats are determined.

CHABLAY, E. (64)
SUR LES CONDITIONS D'HYDROGÉNATION, PAR LES MÉTAUXAMMONIUMS, DE QUELQUES DÉRIVÉS HALOGÉNÉS DES CARBURES GRAS: PREPARATION DES CARBURES ETHYLÉNIQUES ET FORMÉNIQUES. Compt. Rend. Acad. Sci. [Paris]. 142: 93–95. 1906.
Ethylene dichloride and sodammonium give ethylene as expressed in the equation: CH_2Cl. $CH_2Cl+2NH_3+2Na=C_2H_4+2NH_3+2NaCl$.

——— (65)
SUR L'EMPLOI DES MÉTAUX—AMMONIUMS EN CHIMIE ORGANIQUE. Ann Chim. et Phys. (9) 1: 469–519. 1914.
The reaction of ethylene dichloride and sodammonium is studied; the gas formed is shown to be ethylene. A method based on this reaction for the determination of chlorine is given.

CHEMISCHE FABRIK KALK G. M. B. H., and OEHME, H. (66)
EXTRAKTION DES NITRIERUNGSPRODUKTES DES ÄTHYLENS AUS ABFALLSÄURE. German Patent 410470, issued February 15, 1921.
Ethylene dichloride is used as an extractant.

CLOËZ, S. (67)
NOUVEAU GROUPE DE BASES VOLATILES DÉRIVÉES DE LA LIQUEUR DES HOLLANDAIS. Institut 21: 213–214. 1853. [Also in part in Jahresber. Chem. 1853: 468–469 (as Chlorelayl).]
Organic bases are made by the action of ammonia on ethylene dichloride.

COEHN, A. (68)
ELEKTROOSMOTISCHE UNTERSUCHUNGEN. UEBER DAS LADUNGSGESETZ FÜR DIELEKTRIKA, DEN EINFLUSS VON ELEKTROLYTEN UND DEN MECHANISMUS DER ELEKTROOSMOSE. Ztschr. Elektrochem. 16: 586–591. 1910.
The dielectric constant of ethylene dichloride is determined and discussed.

——— and RAYDT, U. (69)
UEBER DIE QUANTITATIVE GÜLTIGKEIT DES LADUNGSGESETZES FÜR DIELEKTRIKA. Nach. Gesell. Wiss. Göttigen 1909: 263–288. [Also in Ann. Phys. (4) 30: 777–804. 1909.]
The dielectric constant of ethylene dichloride is determined and discussed.

COLEMAN, H., MULLINS, G. M., and PICKERING, E. (70)
NITROGEN TRICHLORIDE AND UNSATURATED HYDROCARBONS. II. Jour. Amer. Chem. Soc. 50: 2739–2741. 1928.
The products of the reaction of nitrogen trichloride with ethylene are nitrogen, ammonium chloride, ethylene dichloride, and 2-chloro-1-dichloro-amino-ethane.

——— and NOYES, W. A. (71)
CHLORINATION AND THE FORMATION OF CHLORO-AMINES BY MEANS OF NITROGEN TRICHLORIDE. Jour. Amer. Chem. Soc. 43: 2211–2217. 1921.
A summary is given of previous work showing that ethylene dichloride is not a product of the chlorinating action of free chlorine on ethyl chloride in the absence of a catalytic agent. Nitrogen trichloride reacts with ethyl chloride, giving among other products a relatively large amount of ethylene dichloride. A method for distinguishing between ethylene dichloride and ethylidene chloride is described. In this method small quantities can be used.

COLSON, A., and GAUTIER, H. (72)
ATTAQUE DES HYDROCARBURES PAR LE PERCHLORURE DE PHOSPHORE. Compt. Rend Acad. Sci. [Paris] 102: 1075–1077. 1886.

The reaction of phosphorus pentoxide on ethylene dichloride is studied.

COTTON, A., and MOUTON, H. (73)
BIRÉFRINGENCE MAGNÉTIQUE ET CONSTITUTION CHIMIQUE. Ann. Chim. et Phys. (8) 28: 209–243. 1913.

The results of a study of the magnetic birefringence of a number of compounds, including ethylene dichloride, are tabulated and discussed.

COTTON, R. T., and ROARK, R C. (74)
ETHYLENE DICHLORIDE-CARBON TETRACHLORIDE MIXTURE; A NEW NON-BURNABLE, NON-EXPLOSIVE FUMIGANT. Jour. Econ. Ent. 20: 636–639. 1927.

A mixture of 3 parts of ethylene dichloride and 1 part of carbon tetrachloride is effective for general fumigation in air-tight vaults. Six pounds per 1,000 cubic feet of space are sufficient if the temperature is above 29° C. and the exposure is 24 hours. At 18° 12 pounds per 1,000 cubic feet are required to kill 100 per cent of insects. The advantages of this fumigant are: Relative cheapness, absence of fire hazard, simplicity in use, and safety for human beings. The fumigant kills the clothes moth, *Tineola biselliella;* the furniture beetle, *Anthrenus vorax;* the black carpet beetle, *Attagenus piceus:* the confused flour beetle, *Tribolium confusum;* the rice weevil, *Sitophilus oryza;* the Indian meal moth. *Plodia interpunctella;* and the saw-tooth grain beetle, *Oryzaephilus surinamensis.*

CRAFTS, J. M. (75)
NOTE SUR LE SULFURE D'ÉTHYLÈNE ET SUR UNE COMBINAISON QU'IL FORME AVEC LE BROME. Compt. Rend. Acad. Sci. [Paris] 54: 1277–1279. 1862. [Also in Liebigs Ann. Chem. 124: 110–114. 1862.]

Ethylene dichloride is replaced by the dibromide in the preparation of ethylene sulphides, and the reasons are given.

——— (76)
UEBER DAS UNMITTELBARE PRODUCT DER EINWIRKUNG VON BROMÄTHYLEN AUF EINFACH-SCHWEFELKALIUM Liebigs Ann Chem 128: 220–225. 1863.

The reaction of ethylene dichloride with potassium sulphide is different from that of ethylene dibromide.

CUCULESCU, I. (77)
CONTRIBUTIONS À L'ACTION DU ZINC SUR LES MÉLANGES D'HYDROCARBURES POLYHALOGÉNÉS AVEC DES CÉTONES ET ALDÉHYDES. Bul. Chim Pură Aplicata [Bukarest] 30: 39–41. 1927.

The action of zinc on mixtures of ethylene dichloride and acetone and of ethylene dichloride and acetaldehyde is studied. Ethylene is liberated in both reactions.

CURME, G. O., JR. (78)
PREPARATION OF ETHYLENE DICHLORIDE. U. S. Patent 1315542, issued in 1919.

Ethylene dichloride is formed by the reaction of ethylene with chlorine in the liquid phase.

——— (79)
PRODUCTION OF ETHYLENE DICHLORIDE. U. S. Patent 1315545, issued in 1919.

The reaction of ethylene and chlorine, both in the liquid state, produces ethylene dichloride.

——— (80)
MANUFACTURE OF DICHLOROETHANE. Canadian Patent 203124, issued in 1920.

Ethylene dichloride is produced by passing ethylene into chlorine in a liquid condition.

CURME, G. O., JR. (81)
IMPORTANCE OF THE OLEFINE GASES AND THEIR DERIVATIVES. I—SOURCES AND USES OF ETHYLENE AND PROPYLENE. Chem. and Metall. Engin. 25: 907–909. 1921.

One important use of ethylene is in the manufacture of ethylene dichloride.

——— (82)
IMPORTANCE OF THE OLEFINE GASES AND THEIR DERIVATIVES. III—ETHYLENE DICHLORIDE. Chem. and Metall. Engin. 25: 999–1000. 1921.

The methods of manufacture, the properties, and the uses of ethylene dichloride are given. Ethylene dichloride is a colorless liquid with a chloroformlike odor, boils at 83.5° (760 mm.), melts at −36°, and has the density at $\frac{20°}{4°}$ of 1.2569, the specific heat of 0.3054 at 30°, and the latent heat of vaporization of 157.5 B. t. u. per pound at 0°. It does not corrode metal vessels. The commercial product is very pure and boils sharply. When ignited in air, it supports combustion with difficulty. On long standing in air no oxidation takes place. It is recommended as a valuable solvent.

CUSHNY, A. R. (83)
ON THE EXHALATION OF DRUGS BY THE LUNGS. Jour. Physiol. 40: 17–27. 1910.

Ethylene dichloride is exhaled by the lungs. An experiment on a cat is described. Injection causes failure of the heart and respiration. Ethylene dichloride does not enter the blood. It is shown that the less the solubility of a substance in water and the more distant its chemical affinity with water, the larger the amount exhaled. Ethylene dichloride is recommended by Nunneley as a substitute for chloroform.

DAMIENS, A. A. L. J., LOISY, M. C. J. E. DE, and PIETTE, O. J. G. (84)
A METHOD FOR SEPARATING ETHYLENE AND OTHER UNSATURATED HYDROCARBONS CONTAINED IN INDUSTRIAL GASES. French Patent 535210, issued October 21, 1920.

Ethylene may be extracted by combining it with chlorine to form ethylene dichloride.

DAMOISEAU, O. (85)
SUR UNE NOUVELLE MÉTHODE DE SUBSTITUTION DU CHLORE ET DU BROME DANS LES COMPOSÉS ORGANIQUES. Compt. Rend. Acad. Sci. [Paris] 83: 60–62. 1876. [Abstract in Bul. Soc. Chim. France, 27: 113–114. 1877.]

The reaction of chlorine on ethylene, forming ethylene dichloride, is discussed. A method by which chlorine derivatives of ethylene dichloride may be obtained is described.

DANIELS, F. (86)
INFRA-RED ABSORPTION SPECTRA. SOLUTION OF NITROGEN PENTOXIDE AND NITROGEN TETROXIDE IN ORGANIC LIQUIDS. Jour. Amer. Chem. Soc. 47: 2856–2866. 1923.

The infra-red absorption spectra of nitrogen pentoxide and nitrogen tetroxide in ethylene dichloride are determined.

DAVY. (87)
SUITE DU MEMOIRE SUR L'ACIDE OXIMURIATIQUE, SA NATURE, SES COMBINAISONS, ETC. Ann. Chim. et Phys. (1) 76: 129–158. 1810.

The action of potassium on ethylene dichloride produces potassium chloride and an unidentified gas.

DEIMANN, TROOSTWYK VAN, BONDT, and LOUWRENBURGH. (88)
UEBER DIE GASARTEN, WELCHE MAN AUS VERBINDUNGEN VON STARKER VITRIOLSÄURE UND ALKOHOL ERHÄLT. Chem. Ann. (Crell) 2: 195–205, 310–316, 430–440. 1795.

Ethylene dichloride is prepared for the first time from ethylene ("entzündbare Luft" and "kohligtes Wasserstoffgas") and chlorine and briefly described.

DEMOLE, E. (89)
EINWIRKUNG DES BROMS AUF AETHYLENCHLORHYDRAT. Ber. Deut. Chem. Gesell. 9: 555–562. 1876.

Ethylene dichloride is one of the products of the action of hydrobromic acid on ethylene chlorohydrin.

DENNY, F. E. (90)
SECOND REPORT ON THE USE OF CHEMICALS FOR HASTENING THE SPROUTING OF DORMANT POTATO TUBERS. Amer. Jour. Bot. 13: 386–396. 1926.

Ethylene dichloride forces early sprouting of dormant potatoes.

——— (91)
CHEMICAL TREATMENTS FOR CONTROLLING THE GROWTH OF BUDS OF PLANTS. Indus. and Engin. Chem. 20: 578–581. 1928.

Ethylene dichloride has been found to be effective in influencing plant growth, being successfully employed in causing early development of dormant buds of potatoes. It is also effective in causing the early budding and blooming of woody plants, such as *Deutzia gracilis*. The concentration used to initiate the growth of buds also modifies the subsequent growth, affecting the ratio of leaves to flowers and the time of blooming. The cost and danger of the treatment are discussed.

——— and STANTON, E. N. (92)
CHEMICAL TREATMENTS FOR SHORTENING THE REST PERIOD OF POT-GROWN WOODY PLANTS. Amer. Jour. Bot. 15: 327–336. 1928.

Ethylene dichloride is one of the most effective materials used for breaking the dormant period and inducing early development of buds and flowers.

——— and STANTON, E. N. (93)
LOCALIZATION OF RESPONSE OF WOODY TISSUES TO CHEMICAL TREATMENTS THAT BREAK THE REST PERIOD. Amer. Jour. Bot. 15: 337–344. 1928.

The separate twigs on a given plant act as units, and any one of them can be aroused from the dormant period by exposure to vapors of ethylene dichloride while adjacent untreated twigs remain inactive. Individual buds upon the same twig react in the same way.

DOBROSSERDOW, D. (94)
[EXPERIMENTAL INVESTIGATIONS ON THE RELATION OF THE DIELECTRIC CONSTANTS OF ORGANIC COMPOUNDS TO THEIR COMPOSITION AND STRUCTURE.] Sapiski Kasaner Univ. 1909: 1–326. 1909. [Abstract in Chem. Abs. 5: 3362. 1911.]

The dielectric constant of ethylene dichloride is determined. The following data are given: D 17°/15=1.2615; DE. 20.2°=9.25.

DOLEZALEK, F. (95)
ZUR THEORIE DER BINÄREN GEMISCHE UND KONZENTRIERTEN LÖSUNGEN. Ztschr. Phys. Chem. 64: 727–747. 1908.

Measured and calculated values are given for the partial pressures of mixtures of benzene and ethylene dichloride.

——— (96)
ZUR THEORIE DER BINÄREN GEMISCHE UND KONZENTRIERTEN LÖSUNGEN. III. ERWIDERUNG AN DIE HERREN T. S. PATTERSON UND J. J. LAAR. Ztschr. Phys. Chem. 83: 40–44. 1913.

The critical pressure of ethylene dichloride as determined by Nadejine is stated to be 53 atmospheres. The vapor pressure of the mixture of benzene and ethylene dichloride is discussed.

——— and SPEIDEL, F. (97)
ZUR THEORIE DER BINÄREN GEMISCHE. VI. DIE KOMPRESSIBILITÄT BINÄRER GEMISCHE. Ztschr. Phys. Chem. 94: 72–110. 1920. (Ethylene dichloride, p. 84–86, 99, 110.)

Measurements are made of the compressibilities of mixtures of ethylene dichloride and benzene at all concentrations and at various pressures up to 600 kilograms per square centimeter. The compressibility curves are linear for all pressures. At all concentrations of the components of this mixture the compressibility is additive.

DOUGHTY, H. W. (98)
HYDROLYSIS OF ORGANIC HALIDES AND THE CORROSION OF METALS. Jour. Amer. Chem. Soc. 39: 2685–2692. 1917.

The effects of various halides in causing copper to dissolve in concentrated ammonia water by means of their accelerated hydrolysis are shown. Ethylene dichloride is one of the most resistant to hydrolysis.

DREYFUS, H. (99)
MANUFACTURE OF CELLULOSE DERIVATIVES (ETHERS). British Patent 166767, issued in 1921.
Ethylene dichloride is allowed to react with cellulose in the presence of an alkali.

DUBOIS, R. (100)
ÉTUDE COMPARATIVE DES PROPRIÉTÉS PHYSIOLOGIQUES DES COMPOSÉS CHLORÉS DE L'ÉTHANE. Arch. Physiol. Norm. Path. (4) 2: 298–310, 399–343. 1888.
The action of ethylene dichloride on the cornea after inhalation is studied.

——— (101)
ACTION PHYSIOLOGIQUE DU CHLORURE D'ÉTHYLÈNE SUR LA CORNÉE. Compt. Rend. Acad. Sci. [Paris] 107: 482–484. 1888.
The vapor of ethylene dichloride causes cornea troubles.

——— (102)
NOUVELLES RECHERCHES SUR L'ACTION DU CHLORURE D'ÉTHYLÈNE SUR LA CORNÉE. Compt. Rend. Acad. Sci. [Paris] 107: 695–696. 1888.
Further studies of the action of ethylene dichloride on the cornea are made.

——— (103)
ACTION DES INHALATIONS DU CHLORURE D'ÉTHYLÈNE ($C_2H_4Cl_2$) PUR SUR L'OEIL. Compt. Rend. Acad. Sci. [Paris] 108: 191–192. 1889.
The action of ethylene dichloride on the cornea is discussed with respect to the work of Panas.

——— and ROUX, L. (104)
ACTION DU CHLORURE D'ÉTHYLÈNE SUR LA CORNÉE. Compt. Rend. Acad. Sci. [Paris] 104: 1869–1871. 1887.
The action of ethylene dichloride as an anesthetic and its action on the cornea are discussed.

DUCOM. (105)
PRÉPARATION DE LA LIQUEUR DES HOLLANDAIS. L'Abeille Méd. 9: 314. 1852. [Also in Arch. Pharm. 75: 198–199. 1853.]
Ethylene dichloride is made from chlorine and ethylene.

DUKELSKI, M. (106)
ON THE SOLUBILITIES OF MERCURIC CHLORIDE IN SOLVENT MIXTURES. Trav. Soc. Sci. Physico-Chim. Univ. Kharkoff. Sup. T. 27, Fasc. 10: 1–24. 1899. (Ethylene dichloride, pp. 11, 13, 21, 23, fig. 8.) [Also Über Löslichkeiten von $HgCl_2$ in Lösungsmittelgemengen. Ztschr. Anorgan. Chem. 53: 327–337. 1907.]
The solubility of mercuric chloride in ethylene dichloride at various temperatures is determined. Its solubility in a mixture of ethylene dichloride and methyl alcohol is also determined.

DUMAS, J. (107)
RECHERCHES SUR LA LIQUEUR DES HOLLANDAIS. Ann. Chim. et Phys. (2) 48: 185–198. 1831.
Preparation, properties, and analyses of ethylene dichloride are given. The boiling point under 76 centimeters is 86° C.; the vapor density is 3.46.

——— (108)
RECHERCHES DE CHIMIE ORGANIQUE. Ann. Chim. et Phys. (2) 56: 113–150. 1834.
Dumas' "Liqueur des Hollandais," $C_{16}H_{16}Cl_8$ (or C_2H_2Cl), is compared to Liebig's "Chloräther in Maximo," $C_{16}H_{15}Cl_8$. Dumas found the boiling point to be 85° C. under 770-mm. pressure.

DUNSTAN, A. E., HILDITCH, T. P., and THOLE, F. B. (109)
THE RELATION BETWEEN VISCOSITY AND CHEMICAL CONSTITUTION. PART VII. THE EFFECT OF THE RELATIVE POSITION OF TWO UNSATURATED GROUPS ON VISCOSITY. Jour. Chem. Soc. [London]. 103: 133–144. 1913.
The results of viscosity measurements are:

$$\frac{25°}{4°} = 1.2525,\ \eta^{25°} = 0.007495,\ \frac{\eta \times 10^6}{\text{Mol. vol.}} = 94.5$$

EISENLOHR, F. (110)
EINE NEUBERECHNUNG DER ATOMREFRAKTIONEN. I. Ztschr. Phys. Chem. 75: 585–607. 1910–11.

The molecular weight, boiling point, density, indices of refraction for the $H\alpha$, $H\beta$, $H\gamma$, and D lines of the spectrum, and calculated molecular refractions of ethylene dichloride are tabulated, together with these data for other organic substances.

ELECTRIC FURNACE PRODUCTS CO. (LTD.) (111)
PRODUCTION OF ETHYLENE DICHLORIDE. Norwegian Patent 31349, issued in 1920.

Ethylene in gaseous or liquid state is made to act on liquid chlorine to form ethylene dichloride.

ELLIS, J. W. (112)
THE NEAR INFRA-RED ABSORPTION SPECTRA OF SOME ORGANIC LIQUIDS. Phys. Rev. (2) 23: 48–62. 1924.

The apparatus and method are described. The near infra-red absorption maxima for ethylene dichloride are given and shown graphically.

ENGEL, R. (113)
ACTION DE L'AMMONIAQUE SUR QUELQUES DÉRIVÉS CHLORÉS DE L'ÉTHANE; FIXATION DIRECTE DES ÉLÉMENTS DE L'AMMONIAQUE SUR DES COMPOSÉS NON SATURÉS. Compt. Rend. Acad. Sci. [Paris] 104: 1621–1624. 1887.

Vinyl chloride is prepared from ethylene dichloride and alcoholic potash.

ENGELHARDT, A. (FARBENFABRIKEN VORM. FRIEDR. BAYER & CO.). (114)
DARSTELLUNG VON ABKOMMLINGEN DES GLYKOLS. German Patent 404999, issued July 31, 1919.

Ethylene dichloride is used in the preparation of condensation products with alkali salts of organic acids, phenolates, or alcoholates in the presence of higher alcohols or their fatty-acid esters.

——— (I. G. FARBENINDUSTRIE AKT.-GES.). (115)
DARSTELLUNG VON ÄTHYLENDERIVATEN AUS ÄTHYLENHALTIGEN GASEN. German Patent 442342, issued March 30, 1927.

Ethylene may be separated from gases by combining it with chlorine and recovering it as ethylene dichloride.

ERDMANN, P. (116)
ÜBER AUGENVERÄNDERUNGEN DURCH ÄTHYLENCHLORID. Klin. Monatsbl. Augenheilk. 14: 370–371. 1912.

After inhalation or subcutaneous injection of ethylene dichloride a parenchymatous inflammation of the cornea develops in the eye of the dog.

——— (117)
ÜBER AUGENVERÄNDERUNGEN DURCH ÄTHYLENCHLORID. Arch. f. Augenheilk. 73: 63–108. 1912–13.

After inhalation or subcutaneous injection of ethylene dichloride the dog develops a parenchymatous trouble of the cornea. This trouble does not develop in the cornea of the rabbit or of the guinea pig after similar treatment.

ERLENMEYER, E. (118)
UEBER DIE DICARBONSÄURE AUS DEM AETHYLIDENCHLORÜR. Liebigs Ann. Chem. 145: 365–373. 1868.

Ethylidene chloride is not converted by heating into ethylene dichloride. Ethylene dichloride reacts with greater ease with potassium cyanide than does ethylidene chloride.

EULENBERG, H. (119)
HANDBUCH DER GEWERBE-HYGIENE. Berlin. 1876. (Ethylene dichloride, pp. 401–402.)

The method of preparation and the properties of ethylene dichloride are given. Its action on the animal organism is studied in an experiment on a rabbit, complete anesthesia being produced. Ethylene dichloride irritates the air passages and often causes vomiting in man. A case where a patient was given ethylene dichloride instead of ethylidene chloride through error is described.

FARBENFABRIKEN VORM. FRIEDR. BAYER & Co. (120)
VERFAHREN ZUR DARSTELLUNG VON ESTERN DES GLYKOLS. German Patent 248255, issued November 3, 1910.

Glycol esters of aromatic substitution products of fatty acids may be formed by heating them with ethylene dichloride and water.

——— (121)
VERFAHREN ZUR DARSTELLUNG VON ESTERN DES GLYKOLS. German Patent 245532, issued April 13, 1912.

Ethylene dichloride and sodium benzoate or its derivatives form condensation products. From sodium orthochlorbenzoate, ethylene dichloride, and water at 110° to 120° C. is obtained glycol orthochlorbenzoic acid ester.

——— (122)
METHODS FOR THE PREPARATION OF ETHYLENE DERIVATIVES. French Patent 532735, issued March 25, 1921. [Also British Patent 177362, issued February 23, 1921.]

Ethylene may be separated from gases containing it by combining it with chlorine to form ethylene dichloride.

FARBWERKE VORM. MEISTER LUCIUS & BRÜNING. (123)
VERFAHREN ZUR DARSTELLUNG VON ÄTHERARTIGEN KONDENSATIONSPRODUKTEN DER ANTHRACHINONREIHE. German Patent 280975, issued March 14, 1913.

Etherlike condensation products of the anthraquinone series may be formed by condensing alizarin or its substitution products with ethylene dichloride in the presence of halogen hydride-binding agents, with or without the addition of catalyzers, such as copper or its compounds.

——— (124)
VERFAHREN ZUR DARSTELLUNG VON KONDENSATIONSPRODUKTEN DER ANTHRACHINONREIHE ODER DEREN SULFOSÄUREN. German Patent 282672, issued March 14, 1913.

Condensation products of the anthraquinone series or of their sulphonic acids may be made by bringing into reaction with ammonia or amines or aminosulphonic acids, with or without contact substances, the products of ethylene dihalides and alizarin obtained according to German Patent 280975.

FARGHER, R. G. (125)
DIETHYLENETRIAMINE AND TRIETHYLENETETRAMINE. Jour. Chem. Soc. [London] 117: 1351–1356. 1920.

In the direct union of ethylene and chlorine, electrolytic chlorine is considerably more active than that prepared from bleaching powder. It is found that Kraut's method for the preparation of ethylenediamine by the interaction of ethylene dichloride and a large excess of ammonia leads also to the formation of diethylenetriamine and triethylenetetramine.

FAUST, O. (126)
DIE INNERE REIBUNG VON FLÜSSIGKEITSGEMISCHEN, IHRE ABHANGIGKEIT VON DER TEMPERATUR UND DIE VERWANDTSCHAFT DER INNERN REIBUNG VON FLÜSSIGKEITEN MIT IHREM DAMPFDRUCK. Ztschr. Phys. Chem. 79: 97–123. 1912.

The viscosities and densities of mixtures of benzene and ethylene dichloride are determined at various concentrations at 0°, 19.4°, and 50°.

——— (127)
BINÄRE FLÜSSIGKEITSGEMISCHE. Ztschr. Phys. Chem. 113: 482–489. 1924.
The molecular heat of vaporization of ethylene dichloride is 8.34 calories.

FIELDING, W. R. (128)
POLYMERIZATION AMONGST LIQUIDS. Chem. News 122: 289–293; 123: 1–5. 1921.

The degree of polymerization of ethylene dichloride is studied.

FORCRAND DE. (129)
RECHERCHES SUR LES HYDRATES SULFHYDRÉS. Ann. Chim. et Phys. (5) 28: 5–67. 1883.

A crystalline compound is formed by treating ethylene dichloride with hydrogen sulphide in the presence of water. Its formula is given as $C_4H_4Cl_2+2H_2S_2+23H_2O_2$.

FORCRAND DE, and THOMAS, S. (130)
SUR LA FORMATION DES HYDRATES MIXTES DE L'ACETYLÈNE ET DE QUELQUES AUTRES GAZ. Compt. Rend. Acad. Sci. [Paris] 125: 109–111. 1897.

In the presence of water at a low temperature acetylene forms a mixed hydrate with ethylene dichloride. At higher temperatures it decomposes.

FOURCROY. (131)
EXTRAIT D'UN MEMOIRE SUR TROIS ESPÈCES DIFFÉRENTES DE GAZ HYDROGÈNE CARBONÉ, RETIRÉES DE L'ÉTHER ET L'ALCOHOL PAR DIFFÉRENS PROCÉDÉS, ENVOYÉS A L'INSTITUT PAR LA SOCIÉTÉ DES CHIMISTES HOLLANDOIS; TIRE D'UN RAPPORT LU A LA PERE CLASSE DE L'INSTITUT DE FRANCE. Ann. Chim. (1) 21: 48–71. 1797.

The results of the researches of the Dutch chemists Bondt, Deimann, Van Troostwyk, and Louwrenburgh on ethylene (gaz oléfiant), including the discovery, the method of formation from ethylene and euchlorine (gaz acide muriatique oxigèné), and some of the properties of ethylene dichloride (huile par le mélange du gaz acide muriatique oxigènés au gaz hydrogène carboné huileux) are reported.

FRÄNKEL, S., and NUSSBAUM, K. (132)
ÜBER NEUE BASISCHE CHOLINDERIVATE. Biochem. Ztschr. 182: 424–433. 1927.

Cholindichloride is prepared by the action of ethylene dichloride on trimethylamine in alcoholic solution.

FRIEDEL, C., and SILVA, R. D. (133)
ACTION DE L'ARGENT SUR LE CHLORO-IODURE D'ÉTHYLÈNE. Bul. Soc. Chim. France (2) 17: 242. 1872.

When heated with finely divided silver at 160° ethylene chloroiodide forms ethylene and ethylene dichloride.

——— and SILVA, R. D. (134)
SUR L'ACTION DU CHLORURE D'IODE SUR LE CHLOROFORME ET SUR LES IODURES DES RADICAUX ALCOOLIQUES ET DU BROME SUR LE CHLOROFORME. Bul. Soc. Chim. France (2) 17: 537–539. 1872.

Ethylene passed into chloroiodide forms, not ethylene chloroiodide, but ethylene dichloride.

FRY, H. S. (135)
INTERPRETATIONS OF SOME STEREOCHEMICAL PROBLEMS IN TERMS OF THE ELECTRONIC CONCEPTION OF POSITIVE AND NEGATIVE VALENCES. IX. THE ELECTRONIC FORMULA OF BENZENE AND THE MOLECULAR VOLUMES OF THE CHLOROBENZENES. Jour. Amer. Chem. Soc. 39: 1688–1699. 1917.

The atomic volume of the chlorine atom in ethylene dichloride is calculated from the molecular volume of the compound and the volume of the hydrocarbon groups, and it is discussed in its relation to the electronic formula.

FÜHNER, H. (136)
DIE WIRKUNGSSTÄRKE DER NARKOTICA. I. VERSUCHE AM ISOLIERTEN FROSCHHERZEN. Biochem. Ztschr. 120: 143–163. 1921.

Studies are made on the strength of narcotic action of ethylene dichloride on the frog heart. Solubilities of ethylene dichloride are as follows: In water, 0.075; in 20 per cent calcium chloride solution, 0.050; in 20 per cent potassium carbonate solution, 0.027 mol. per liter.

GABBANO, L. (137)
UNTERSUCHUNGEN ÜBER DEN WIRKUNGSMECHANISMUS UND DEN DESINFEKTIONSWERT EINIGER CHLORDERIVATE DES METHANS, ÄTHANS UND ÄTHYLENS. Ztschr. Hyg. u. Infektionskrankh. 109: 183–193. 1928.

Physical properties of ethylene dichloride are given. A saturated aqueous solution kills *Staphylococci* (*albus, citreus, and aureus*) in three hours. Higher concentrations used in the form of fine emulsions act much more quickly against *Bacillus coli, B. diphtheriae,* and *Vibrio cholerae* as well as the Staphylococci. Comparisons of the bactericidal action of the different chlorine derivatives are made. Experiments show that the differences in bactericidal action agree with the different lipoid (cholesterin) dissolving powers; the compound having the strongest lipoid dissolving power possesses the most marked disinfecting property. There is no connection between the surface action and the disinfection action. A satisfactory explanation of the mechanism of the bactericidal action of these chlorine compounds is to be obtained only from the Overton lipoid theory.

GABBANO, L. (138)
ÜBER DIE DESINFEKTION DER BARBIERGEGENSTÄNDE MITTELS EINIGER CHLORVERBINDUNGEN DES ÄTHANS UND ÄTHYLENS. Ztschr. Hyg. u. Infektionskrankh. 109: 194–200. 1928.

The bactericidal action of mixtures of ethylene dichloride of several concentrations with 70 per cent alcohol (both pure and ordinary distilled) is determined against Staphylococci, *Bacillus coli*, *B. diphtheriae*, *Vibrio cholerae*, and the thread fungi, *Achorion schönleini* and *Trichophyton violaceum*. The aqueous alcoholic solutions of the chlorine compounds of methane, ethane, and ethylene have a strong disinfecting action, which is far more pronounced than that of ethyl alcohol whether it is pure or ordinary distilled alcohol.

GABRIEL, S. (139)
UEBER EINIGE DERIVATE DES AETHYLAMINS. Ber. Deut. Chem. Gesell. 21: 566–575. 1888.

Ethylene dichloride reacts with potassium phthalimide at 200° to give essentially ethylene diphthalimide.

GARELLI, F. (140)
IL BROMURO STANNICO COME SOLVENTE NELLE DETERMINAZIONI CRIOSCOPICHE. Rend. Accad. Lincei (5) 7 (2): 27–34. 1898. [Also in Gaz. Chim. Ital. 28 (2): 253–261. 1898.

Ethylene dichloride with stannic bromide gives the normal lowering of the freezing point.

GAULT, H. (141)
L'HALOGÉNATION PROGRESSIVE DES CARBURES ACYCLIQUES SATURÉS. Rev. Gén. Sci. 36: 268–275. 1925.

Reference is made to methods for the chlorination of ethylene dichloride.

GAY, L. (142)
SUR LES MÉLANGES D'ACIDE ACÉTIQUE AVEC LES LIQUIDES NORMAUX. Compt. Rend. Acad. Sci. [Paris] 152: 518–519. 1911.

Mixtures of acetic acid with certain liquids, among them ethylene dichloride, behave abnormally as to variation in volume, the changes in volume being too small.

GEUTHER, A. (143)
UEBER DIE CONSTITUTION DES ALDEHYDS UND DES ELAYLCHLORÜRS. Liebigs Ann. Chem. 105: 321–329. 1858.

Ethylene dichloride does not react at its boiling temperature with silver oxide, but in a sealed tube heated to 120° reaction takes place. A similar reaction appears to take place when potassium hydroxide is used in a sealed tube at 125°.

——— (144)
VERMISCHTE BEOBACHTUNGEN. Liebigs Ann. Chem. 106: 239–252. 1858.

The constitutional relationship of ethylene dichloride to glycol is stated.

——— (145)
UEBER DIE BILDUNG DER BERNSTEINSÄURE AUS LEUCHTGAS. Liebigs Ann. Chem. 120: 268–270. 1861.

The method of making succinic acid from ethylene dichloride is discussed.

——— and STAPFF, H. (146)
UEBER DIE CHLORSUBSTITUTIONSPRODUCTE DES CHLORÄTHYLS. Jenaische Ztschr. Med. u. Naturw. 6: 228–234. 1870–71.

Geuther found a small amount of ethylene dichloride in the product of the action of chlorine on chlorinated ethyl chlorides. He believed it was not formed together with simple chlorinated ethyl chlorides by the action of chlorine on ethyl chloride in sunlight, but probably from the alcohol vapor mixed with the ethyl chloride gas, and he gave the equation $CH_3CH_2OH + 2Cl = CH_2ClCH_2Cl + H_2O$. Formulas for ethylene dichloride and its chlorine substitution products are given. The boiling point is given as 82.5°.

GÖSSL, J. (147)
ZUR KENNTNIS DER LIPOIDLÖSENDEN DESINFEKTIONSMITTEL. (ZUR THEORIE DER DESINFEKTION. II.) Ztschr. Physiol. Chem. 88: 103–108. 1913.

The disinfectant action of ethylene dichloride is studied. It is found to be exceedingly active in inhibiting the growth of compressed yeast.

GÖTZ, I. D. (148)

ÜBER DIE BEIM VERDÜNNEN KONZENTRIERTER LÖSUNGEN, BZW. BEIM MISCHEN ZWEIER FLÜSSIGKEITEN AUFTRETENDEN VOLUMÄNDERUNGEN. Ztschr. Phys. Chem. 94: 181–209. 1920.

The thermal expansion of ethylene dichloride over the temperature interval 0° to 40° is the same as that of ethyl ether under an external pressure of 420 atmospheres. The thermal expansions of mixtures of ethyl ether and ethylene dichloride of different concentrations are studied. The volume changes which occur when a concentrated ethyl ether solution of ethylene dichloride is diluted with ethyl ether agree fairly well with the values calculated by means of Tammann's law of concentrated solutions.

GOLDSCHEIDER, A., and JOACHIMOGLU, G. (149)

UNTERSUCHUNGEN ÜBER DEN TEMPERATURSINN. III. ÜBER DIE WIRKUNG VON CHLORDERIVATEN DES METHANS, ÄTHANS UND ÄTHYLENS SOWIE EINIGER ANDERER STOFFE AUF DIE HAUTNERVEN. Pflüger's Arch. Physiol. 206: 325–333. 1924.

A comparative study is made of the effect of ethylene dichloride and other chlorine derivatives upon the nerves of the skin.

GOLDSCHMIDT, T. AKT.-GES. (150)

PREPARATION OF ETHYLENE AND ETHYLENE DICHLORIDE. British Patent 147908, issued July 9, 1920.

Ethylene dichloride is obtained by treating ethylene in large excess with chlorine in the presence of a catalyst, such as ferric, copper, or antimony chlorides at a temperature of 30° to 120°.

——— (151)

PREPARATION OF ETHYLENE DICHLORIDE. British Patent 147909, issued July 9, 1920.

The ethylene in coal gas or other gases produced by the distillation of carbonaceous matter, such as lignite and oils, is utilized for the production of ethylene dichloride by treating the gases with chlorine in the presence of a catalyst and separating the ethylene dichloride by liquefaction.

——— (152)

A METHOD FOR OBTAINING THE UNSATURATED HYDROCARBONS CONTAINED IN TECHNICAL GAS MIXTURES. French Patent 533296, issued February 27, 1922.

Methods of separating ethylene dichloride from ethylene are described.

——— and ARNOLD, H. (153)

EFFECTING CHEMICAL REACTIONS. British Patent 158836, issued January 31, 1921.

Chlorine and olefine-containing gas (as ethylene) may be alternately passed through a heated chamber and a cooling chamber to separate out the olefine chlorides (as ethylene dichloride).

——— and MATTER, O. (154)

VERFAHREN ZUR UNUNTERBROCHENEN GEWINNUNG VON ÄTHYLENCHLORID. German Patent 298931, issued January 26, 1922. French Patent 533295, issued February 27, 1922. Also Austrian Patent 88625, issued May 26, 1922.

Ethylene dichloride is prepared by the reaction of ethylene and chlorine in the presence of a catalyst such as ferric chloride, cupric chloride, or antimony pentachloride.

GOMBERG, M. (155)

ETHYLENECHLOROHYDRIN AND β, β-DICHLOROETHYLSULFIDE. Jour. Amer. Chem. Soc. 41: 1414–1431. 1919.

The formation of ethylene dichloride from ethylene and chlorine is discussed. The method of preventing its formation in the manufacture of ethylenechlorohydrin is given. The effects of acids, salts, etc., on its formation are shown. The action of sodium sulphide on ethylene dichloride is discussed.

GREENE, W. H. (156)
ON THE FORMATION OF DIBENZYL BY THE ACTION OF ETHYLENE CHLORIDE ON BENZOL IN THE PRESENCE OF ALUMINIUM CHLORIDE. Chem. News. 50: 61. 1884.

Dibenzyl is formed by the action of ethylene dichloride on benzene in the presence of aluminum chloride.

GREMLI, E. (157)
CHLORIEREN VON KOHLENWASSERSTOFFEN. Austrian Patents 108421 and 108424, issued December 27, 1927. [Abstract in Chem. Zentbl. (1) 1928: 1229.]

Ethylene dichloride is prepared by the action of chlorine on ethane at 300° to 650° in the presence of oxygen or a gas containing oxygen and a catalyst.

GROSSMANN, H. (158)
STUDIEN ÜBER ROTATIONSDISPERSION. I. ÜBER DIE ABHÄNGIGKEIT DER ROTATIONSDISPERSION DES WEINSÄUREDIÄTHYLESTERS UND DES MENTHOLS VON LÖSUNGSMITTEL. Ztschr. Phys. Chem. 73: 148–162. 1910.

The rotation dispersion in 6, 15, and 30 per cent solutions of diethyltartrate in ethylene dichloride is studied, red, yellow, green, light blue, and blue light being used.

GULDBERG, C. M. (159)
DAS MOLEKULARVOLUM BEI ABSOLUTEM NULLPUNKT. Ztschr. Phys. Chem. 16: 1–17. 1895.

The molecular volume is calculated and found to be 63.5 cubic centimeters. Other calculations are made.

GUYOT, J., and SIMON, L. J. (160)
COMBUSTION PAR LE MÉLANGE SULFOCHROMIQUE DES COMPOSES ORGANIQUES RENFERMANT DU CHLORE. Compt. Rend. Acad. Sci. [Paris] 170: 734–736. 1920.

Ethylene dichloride is one of the substances on which carbon is determined by the application of the method of Baubigny and Chavanne for liberating and determining chlorine and bromine in organic compounds.

GWATHMEY, J. T., and BASKERVILLE, C. (161)
ANESTHESIA. 945 p. New York. 1914. (Ethylene dichloride, p. 749.)

The use of ethylene dichloride as an anesthetic in earlier days of medicine is mentioned. Simpson first studied its anesthetic action in 1846. Richardson in 1851 regarded it as a good anesthetic, very much like chloroform in its action, although less rapid.

HAAGEN, A. (162)
BESTIMMUNG DER BRECHUNGSEXPONENTEN UND SPECIFISCHEN GEWICHTE EINIGER FLÜSSIGEN HALOIDVERBINDUNGEN. Ann. Phys. u. Chem. (Poggendorff) 131: 117–128. 1867.

The method of preparation of ethylene dichloride from ethylene and chlorine is given. The specific gravity at 20° is given as 1.2562; the refractive indices are, $\mu_\alpha = 1.44201$, $\mu_\beta = 1.45038$, $\mu_\gamma = 1.45511$. Its refractive power is determined and tabulated.

HAASE, E. (163)
EINIGE SCHMELZPUNKTSBESTIMMUNGEN. Ber. Deut. Chem. Gesell. 26: 1052–1054. 1893.

The method of obtaining the melting point with an air thermometer is described. The melting point of ethylene dichloride is found to be −42° C.

HALL, M. C., and SHILLINGER, J. E. (164)
CRITICAL TESTS OF MISCELLANEOUS ANTHELMINTICS. Jour. Agr. Research 29: 313–332. 1924

From experiments performed it is concluded that ethylene dichloride shows a slight efficacy against hookworms in dogs, but this efficacy is distinctly less than that of carbon tetrachloride. Anthelmintic efficacy is apparently dependent on the concentration of the halogen atom. Ethylene dichloride is ineffective against whipworms and tapeworms in dogs

HARDING, V. J. (165)
CHLOROHYDROCARBONS. British Patent 126511, issued June 11, 1918.

Ethylene dichloride is prepared by the reaction of gaseous ethylene with chlorine in the presence of a contact substance (brick, pumice, sand, glass, coke, charcoal, ferric oxide, alumina, magnesia, etc.) in the absence of water or steam.

HARKINS, W. D., DAVIES, E. C. H., and CLARK, G. L. (166)
THE ORIENTATION OF MOLECULES IN THE SURFACES OF LIQUIDS, THE ENERGY RELATIONS AT SURFACES, SOLUBILITY, ADSORPTION, EMULSIFICATION, MOLECULAR ASSOCIATION, AND THE EFFECT OF ACIDS AND BASES ON INTERFACIAL TENSION. Jour. Amer. Chem. Soc. 39: 541–596. 1917.

Physico-chemical data are given.

HARRIS, H. (167)
THE MEASUREMENT OF THE DIELECTRIC CONSTANTS OF LIQUIDS. Jour. Chem. Soc. [London] 127: 1049–1069. 1925.

The dielectric constant of ethylene dichloride is measured and found to be 10.131 ± 0.001 at 25° C.

HEEN, P., DE (168)
DÉTERMINATION DU COEFFICIENT DE COMPRESSIBILITÉ DE QUELQUES LIQUIDES ET DES VARIATIONS QUE CETTE QUANTITÉ ÉPROUVE AVEC LA TEMPÉRATURE. LOI THÉORIQUE QUI RÉGIT LES VARIATIONS DU COEFFICIENT DE COMPRESSIBILITÉ AVEC LA TEMPÉRATURE. Bul. Acad. Roy. Sci. Lett. Belg. (3) 9: 550–564. 1885.

The compressibility of ethylene dichloride is studied.

HEFFTER, A., and JOACHIMOGLU, G. (169)
DIE WIRKUNGEN DES TETRACHLORAETHANS. (GEWERBLICHE VERGIFTUNGEN IN FLUGZEUGFABRIKEN. II.) Vrtljschr. gerichtl. Med. u. Öff. Sanitätsw. (3) 48 Sup. 2: 192–204. 1914.

In connection with a study of the effect of tetrachloroethane mention is made of the action of ethylene dichloride in causing cornea troubles.

HENDERSON, V. E., and BROWN, W. E. (170)
THE THEORY OF ANESTHESIA AND THE PROBLEM OF TOXICITY. Jour. Pharmacol. and Expt. Ther. 29: 269–278. 1926.

The narcotic strength of ethylene dichloride as determined by Müller on white mice is 0.00023 mols per liter, and its toxicity is equal to that of chloroform.

HERZ, W. (171)
ZUR KENNTNIS DES PHYSIKALISCHEN VERHALTENS VON FLÜSSIGKEITEN. Ztschr. Elektrochem. 26: 109–111. 1920.

The molar boiling point elevation of ethylene dichloride is calculated. Data used in this calculation are: Critical temperature = 561, critical density = 0.419, critical pressure = 53. The calculated value is 3.32; that found is 3.12. The capillary constant is also calculated. According to one equation this is 4.43 (found, 4.20); according to another, 4.61.

——— (172)
DIE LICHTBRECHUNG BEI ÜBERINSTIMMENDEN TEMPERATUREN. Ztschr. Phys. Chem. 98: 175–180. 1921.

The following values are given for ethylene dichloride: Index of refraction at 20° = 1.44432; density at 20° = 1.2521; density at the critical temperature = 0.419; index of refraction at the critical temperature = 1.149.

HILDEBRAND, J. H. (173)
SOLUBILITY. Jour. Amer. Chem. Soc. 38: 1452–1473. 1916.

Values for internal pressure obtained from three sources, critical pressure, and dielectric constant are tabulated and discussed. The mixture benzene and ethylene dichloride is described as following Raoult's law.

——— (174)
SOLUBILITY. III. RELATIVE VALUES OF INTERNAL PRESSURES AND THEIR PRACTICAL APPLICATION. Jour. Amer. Chem. Soc. 41: 1067–1080. 1919.

Values of internal pressures are given.

HILDEBRAND, J. H. (175)
SOLUBILITY. VI. THERMODYNAMIC RELATION BETWEEN SOLUBILITY AND INTERNAL PRESSURE. Jour. Amer. Chem. Soc. 43: 500–507. 1921.

Internal pressure data on ethylene dichloride are given.

——— and JENKS, C. A. (176)
SOLUBILITY. VII. SOLUBILITY RELATIONS OF RHOMBIC SULPHUR. Jour. Amer. Chem. Soc. 43: 2172–2177. 1921.

The solubility of rhombic sulphur at various temperatures in ethylene dichloride is determined.

HILDITCH, T. P., and DUNSTAN, A. E. (177)
DIE BEZIEHUNGEN DER VISKOSITÄT ZU ANDEREN PHYSIKALISCHEN EIGENSCHAFTEN. III. TEIL. DER EINFLUSS VON RÄUMLICH BENACHBARTEN UNGESÄTTIGTEN GRUPPEN. Ztschr. Elektrochem. 18: 881–885. 1912.

The viscosity of ethylene dichloride is determined to obtain evidence bearing upon the mutual influence of neighboring unsaturated groups. Determination of the molecular refractivity is also made.

HOFMANN, A. W. (178)
RECHERCHES SUR LES BASES POLYAMMONIQUES. Compt. Rend. Acad. Sci. [Paris] 46: 255–260. 1858. [Also in Phil. Mag. and Jour. Sci. (4) 16: 309–312. 1858.]

Organic bases formed by the action of ammonia on ethylene dichloride are discussed.

——— (179)
ACTION OF BIBROMIDE OF ETHYLENE UPON ANILINE. Phil. Mag. and Jour. Sci. (4) 17: 66–71. 1859.

The product of the reaction of ethylene dichloride on aniline is discussed.

——— (180)
NOTES OF RESEARCHES ON THE POLY-AMMONIAS. VII. ON THE DIATOMIC AMMONIAS. Roy. Soc. [London] Proc. 10: 224–234. 1859–60.

The action of ethylene dichloride on ammonia is discussed.

——— (181)
RESEARCHES ON THE PHOSPHORUS-BASES. X. METAMORPHOSES OF BROMIDE OF BROMETHYLATED TRIETHYLPHOSPHONIUM. Roy. Soc. [London] Proc. 10: 610–613. 1859–60.

Ethylene dichloride resembles ethylidene chloride in its deportment with triethylphosphine.

——— (182)
DARSTELLUNG DER AETHYLENBASEN IM GROSSEN. Ber. Deut. Chem. Gesell. 4: 666–668. 1871.

The by-products of chloral manufacture including ethylene dichloride may be heated to 100° to 120° with an excess of alcoholic ammonia to form ethylenediamine.

——— (183)
ZUR GESCHICHTE DER AETHYLENBASEN. UEBER DIE EIGENSCHAFTEN DES DIÄTHYLENDIAMINS. Ber. Deut. Chem. Gesell. 23: 3297–3303. 1890.

The action of ammonia on ethylene dichloride is studied. The preparation of diethylenediamine by the action of ethylene dichloride on ethylenediamine is mentioned.

——— (184)
ZUR GESCHICHTE DER AETHYLENBASEN. Ber. Deut. Chem. Gesell. 23: 3711–3718. 1890.

Triethylenetetramine is obtained from the interaction of ethylenediamine and ethylene dichloride.

HOFMANN, K. A., KIRMREUTHER, H., and THAL, A. (185)
CARBONIUMPERCHLORATE (2, MITTEILUNG) UND DAS LÖSUNGSVERMÖGEN DER GECHLORTEN ÄTHANE. Ber. Deut. Chem. Gesell. 43: 183–188. 1910.

The solvent power of ethylene dichloride is discussed. In this solvent, triphenylmethyl perchlorate has the values $K_{17°}$, 0.000215; λ, 11.89. The colors of solutions are compared. The solubility of mercuric chloride in ethylene dichloride (1.216 gram per gram-molecule of liquid at 25° C.) is compared to that in other solvents. The solubility of sulphur in ethylene dichloride (0.831 gram per gram-molecule of liquid at 25°) is compared to that in other solvents. The order of solubilities of sulphur is found to be different from that of the salts.

HOMER, A. (186)
THE FRIEDEL-CRAFTS' REACTION APPLIED TO NAPHTHALENE. THE ACTION OF DI-, TRI-, AND TETRAALKYL HALIDES. PREPARATION OF α-β-ά-β-DINAPHTHANTHRACENE. Jour. Chem. Soc. [London] 97: 1141–1154. 1910.

Interaction of ethylene dichloride and naphthalene results in the formation of picene.

HOUGH, A. (187)
ETHYLENE GLYCOL. U. S. Patent 1206222, issued November 28, 1917.

Ethylene is treated with chlorine to form ethylene dichloride. Ethylene glycol is formed from the dichloride by the action of ferric oxide.

HOYT, L. F. (188)
SOME FUMIGATION TESTS WITH ETHYLENE DICHLORIDE-CARBON TETRACHLORIDE MIXTURE. Indus. and Engin. Chem. 20: 460–461. 1928.

The fumigating mixture of ethylene dichloride (3 volumes) and carbon tetrachloride (1 volume) advocated by Cotton and Roark gives 100 per cent kill with *Plodia interpunctella*, *Tineola biselliella*, and *Tribolium confusum* when used in a gas-tight vault at the rate of 14 pounds (5 quarts) per 1,000 cubic feet for 24 hours at 82° F. Tests on *Tribolium confusum* and *Ephestia kuehniella* in an 8,000-cubic-foot room with the same dosage and time gave satisfactory results, but, owing to the leakage of the fumigant and to the difficulty of raising the temperature, a 100 per cent kill was not immediately obtained. However, the insects which survived were so poisoned that they all died within three days. The fumigant is cheap, easy and safe to use, easy to remove, and satisfactory in killing effect.

——— (189)
COMPARATIVE TESTS WITH CERTAIN FUMIGANTS. Indus. and Engin. Chem. 20: 835–837. 1928.

A dosage of 14 pounds of the ethylene dichloride-carbon tetrachloride fumigant per 1,000 cubic feet used at 75° to 80° F. for 24 hours in a Plymetl fumigating vault gives a 100 per cent kill of the three species of insects used: The confused flour beetle, *Tribolium confusum;* the Indian meal moth, *Plodia interpunctella*, and the clothes moth, *Tineola biselliella.* The effect of the fumigant on food products is studied. Products rich in fat absorb the fumigant and require exposure to the air for varying lengths of time to return to a condition of palatability. The fumigant has no consistent effect on the germination of oats, wheat, white beans, shelled peanuts, and clover. There is apparently no corrosion or tarnishing of the various metals used.

——— (190)
FURTHER FUMIGATION TESTS WITH ETHYLENE DICHLORIDE-CARBON TETRACHLORIDE MIXTURE. Indus. and Engin. Chem. 20: 931–932. 1928.

Grain, flour, foods, and seeds are fumigated in a 500-cubic-foot Plymetl vault with 2½ quarts (7 pounds) of a 3:1 mixture of ethylene dichloride and carbon tetrachloride for a 24-hour period at a temperature of 75° F. A 100 per cent kill is obtained with the two species of insects used, the confused flour beetle and the Indian meal moth. No reinfestation of the fumigated sample has occurred during two months. No difference in the odor, texture, or general appearance of the bread is shown in baking tests. A 44-hour fumigation of moth-infested rugs and furniture in a sealed 7,800-cubic-foot storage room, with the same dosage, is 100 per cent effective. In the latter case, a new method of distributing the fumigant is used. Strips of burlap and a runner rug soaked in the mixture are suspended in the room.

IKEDA, K. (191)
CAPILLARY ATTRACTION IN RELATION TO CHEMICAL COMPOSITION, ON THE BASIS OF R. SCHIFF'S DATA. Jour.Col. Sci., Imp. Univ. Tokyo 3: 241–268. 1890.

Ethylene dichloride is one of a number of compounds studied.

(192)
IRVINE, J. C., and HAWORTH, W. N. (Carbide and Carbon Chemicals Corp., New York).
GLYCOL CHLOROHYDRIN. U. S. Patent 1496675, issued June 3, 1924.
Ethylene dichloride is a by-product in the preparation of glycol chlorohydrin by a method of passing ethylene into chlorine water containing a copper compound as a catalyst. Ethylene dichloride may be used as a solvent for separating the glycol chlorohydrin.

JAEGER, F. M. (193)
ÜBER DIE TEMPERATURABHÄNGIGKEIT DER MOLEKULAREN FREIEN OBERFLÄCHENENERGIE VON FLÜSSIGKEITEN IM TEMPERATURBEREICH VON —80 BIS +1650° C. Ztschr. Anorgan. u. Allg. Chem. 101: 1–214. 1917. (Ethylene dichloride, pp. 58, 99, 100, 208.)

Determination of the surface tension, specific gravity, and molecular surface energy of ethylene dichloride are made at different temperatures and pressures. Other physico-chemical measurements are given.

—— and KAHN, J. (194)
ONDERZOEKINGEN OVER DE TEMPERATUUR-KOËFFICIENTEN DER VRIJE MOLEKULAIRE OPPERVLAKTE—ENERGIE VAN VLOEISTOFFEN TUSSCHEN—80° EN 1650° C.: X. METINGEN AAN EENE REEKS VAN ALIFATISCHE VERBINDINGEN. K. Akad. Wetenschappen te Amsterdam, Verslag Wis. en Natuurk. Afd. 24: 205–220. 1915.

Measurements are made of the surface tension of ethylene dichloride and its variation with changes in temperature. A number of physical constants are given, including densities at various temperatures. The temperature coefficient of the molecular surface energy for ethylene dichloride is found to be 2.16 ergs per degree. The equation for the change of density with the temperature is found to be $d=1.2826-0.001446t$.

JÄRVINEN, K. K. (195)
ÜBER DIE MOLEKULARATTRAKTION. II. Ztschr. Phys. Chem. 88: 428–450. 1914.

The value for the attraction constant, k, for ethylene dicloride is calculated from an equation based on a form of Newton's law of gravitation and is found to be 23.6. The value, ks, in which s denotes the density at the boiling point, is also determined.

JAHN, H. (196)
NOTIZ ÜBER DIE LATENTEN VERDAMPFUNGSWÄRMEN EINIGER ORGANISCHER VERBINDUNGEN. Ztschr. Phys. Chem. 11: 788–793. 1893.

The latent heat of vaporization of ethylene dichloride is found to be 85.4 gram calories. The specific gravity of ethylene dichloride is given as 1.28082, the dielectric constant as 11.315.

—— and MÖLLER, G. (197)
ÜBER DIE DISPERSIONSFREIE MOLEKULARREFRAKTION EINIGER ORGANISCHER VERBINDUNGEN. Ztschr. Phys. Chem. 13: 385–397. 1913.

Molecular refraction data for ethylene dichloride are given.

JANOVSKY, J. V. (198)
DIE ÄNDERUNG DES MOLECULARGEWICHTES UND DAS MOLECULARREFRACTIONSVERMÖGEN. Monatsh. Chem. 1: 512–523. 1880.

The refractive index for ethylene dichloride is given as 1.4470.

JELTEKOW, A. (199)
MITTHEILUNG. Ber. Deut. Chem. Gesell. 6: 558. 1873.

On heating ethylene dichloride with water and lead oxide in a closed tube for several hours at 170° ethylene glycol is formed.

JOACHIM, H. (200)
ÜBER DIE MESSUNG DER DIELEKTRIZITÄTSKONSTANTE IN DER WHEATSTONESCHEN BRÜCKE BEI ANWENDUNG HOHER FREQUENZEN. Ann. Phys. [Leipzig] (4) 60: 570–596. 1919.

Measurements of the dielectric constant of ethylene dichloride are made.

JOACHIMOGLU, G. (201)
DIE PHARMAKOLOGIE DES TRICHLORÄTHYLENS (CHLORYLEN KAHLBAUM). Berlin. Klin. Wchnschr. 58: 147–149. 1921.

The structural relationship of ethylene dichloride to other chlorine derivatives is shown. From experiments with fish (carp), it is found that the narcotic activity of ethylene dichloride is equal to that of chloroform. Plötz found the relative hemolytic activity of ethylene dichloride, compared with that of chloroform as 1, to be 0.52.

——— (202)
DIE WIRKUNG EINIGER VERWANDTEN DES CHLOROFORMS MIT BESONDERER BERÜCKSICHTIGUNG DER TRAUBESCHEN THEORIE ÜBER DIE WIRKUNG DER NARKOTICA DER FETTREIHE. Biochem. Ztschr. 120: 203–211. 1921.

Comparative data are given on the narcotic action of various compounds, including ethylene dichloride, on the frog heart and yeast fermentation.

——— (203)
VERGLEICHENDE UNTERSUCHUNGEN ÜBER DIE ANTISEPTISCHE WIRKUNG EINIGER CHLORDERIVATE DES METHANS, ÄTHANS, UND ÄTHYLENS. Biochem. Ztschr. 124: 130–136. 1921.

The aqueous solution of ethylene dichloride has antiseptic properties. The Metchnikoff vibrio being used as substrate, the lethal concentration of ethylene dichloride is 0.0455 mols. The action of ethylene dichloride is compared to that of other chloro derivatives.

——— (204)
ÜBER DIE WIRKUNG EINIGER NARKOTICA DER FETTREIHE AUF DIE GLATTE MUSKULATUR DES BLUTEGELS. Biochem. Ztschr. 156: 224–235. 1925.

Ethylene dichloride causes contraction and tonus changes in the muscles of blood vessels. Its action is compared to that of other chloro-compounds. The action depends upon the number of chlorine atoms in the compound.

JÜPTNER, H. v. (205)
VERDAMPFUNGSSTUDIEN. II. Ztschr. Phys. Chem. 63: 579–618. 1908.

Values for the internal pressure and molecular volume of ethylene dichloride are given.

——— (206)
VERDAMPFUNGSSTUDIEN. III. Ztschr. Phys. Chem. 64: 709–726. 1908.

Critical data for ethylene dichloride are given.

——— (207)
VERDAMPFUNGSSTUDIEN. V. Ztschr. Phys. Chem. 73: 343–382. 1910.

Critical data for ethylene dichloride are tabulated.

KANONNIKOFF, J. (208)
[THE INFLUENCE OF STRUCTURE ON THE REFRACTIVE PROPERTIES OF ORGANIC COMPOUNDS.] Zhur. Russ. Fiz.-Khim. Obshch. 13: 268–286. 1881 [Also in Bul. Soc. Chim. France (2) 36: 557. 1881.

The specific and the molecular refractive powers of ethylene dichloride are given.

——— (209)
UNTERSUCHUNGEN ÜBER DAS LICHTBRECHUNGSVERMÖGEN CHEMISCHER VERBINDUNGEN. Jour. Prakt. Chem. (2) 32: 497–523. 1885.

The refractive power of ethylene dichloride is studied.

KASTLE, J. H., and HADEN, R. L. (210)
A STUDY OF ORTHOAMINOPARASULPHOBENZOIC ACID AND ITS DERIVATIVES WITH SPECIAL REFERENCE TO THEIR FLUORESCENCE. Amer. Chem. Jour 46: 508–518. 1911.

Ethylene dichloride is used as one of the solvents in the comparison of two esters as to fluorescence.

KAUFFMANN, H. (211)
DAS MOLEKULARVOLUMEN FLÜSSIGER ORGANISCHER VERBINDUNGEN. Ztschr. Elektrochem. 25: 343–351. 1919.

The molecular volume of ethylene dichloride is studied together with that of other compounds. $V\frac{20}{M}=78.9$.

KAUFMANN, W. VON, and LEWITE, A. (212)
ÜBER DIE NATUR DER LÖSUNGEN VON STÄRKE IN FORMALIN UND DIE QUANTITATIVE RÜCKVERWANDLUNG VON FORMALIN STÄRKE IN STÄRKE, ZUGLEICH EIN BEITRAG ZUR KENNTNIS DES FARBENTONS VON JODLÖSUNGEN. Ber. Deut. Chem. Gesell. 52: 616–627. 1919.

The solution of iodine in ethylene dichloride is cherry-red in color.

KETTELER, E. (213)
EXPERIMENTALUNTERSUCHUNG ÜBER DAS REFRACTIONSVERMÖGEN DER FLÜSSIGKEITEN ZWISCHEN SEHR ENTFERNTEN TEMPERATURGRENZEN. Ann. Physik Chem. (2) 33: 353–381, 506–534; 35: 662–699. 1888. (Ethylene dichloride, p. 358.)

The results of Weegmann on the refractive power of ethylene dichloride are studied.

——— (214)
GRUNDZÜGE EINER NEUEN THEORIE DER VOLUM- UND REFRAKTIONSÄQUIVALENTE. Ztschr. Phys. Chem. 2: 905–919. 1888.

Ethylene dichloride is one of a number of substances considered in a study of molecular refraction.

KIESSLING, W. (215)
VERGLEICHENDE UNTERSUCHUNGEN ÜBER DIE WIRKUNG EINIGER CHLORDERIVATE DES METHANS ÄTHANS UND ÄTHYLENS AM ISOLIERTEN FROSCHHERZEN. Biochem. Ztschr. 114: 292–296. 1921.

The pharmacological action of ethylene dichloride on the frog heart is studied. It causes ventricular paralysis.

KILLEFFER, D. H. (216)
CHEAP ETHYLENE DICHLORIDE. Indus.. and Engin. Chem. 19: 636–639. 1927.

Ethylene dichloride is now available in large quantities at low prices (6 cents per pound in tank car lots being quoted in November, 1926). Its commercial possibilities are discussed, including its use in the manufacture of glycol diacetate, a cellulose solvent, and of ethylene diamine, benzaldehyde, benzoic acid, and succinic acid. The vapor pressure curve of ethylene dichloride is shown, and the solubility of gums, resins, waxes, cellulose esters, oils, and resinates in it is included in a table.

KOENIGS, W. (217)
EINWIRKUNG VON PHOSPHORSUPERCHLORID AUF AETHYLENDISULFONSÄURE. Ber. Deut. Chem. Gesell. 7: 1163–1164. 1874.

Ethylene dichloride is among the final products of the action of phosphorus pentachloride on ethylene disulphonic acid.

KOLDA, E. (218)
ÜBER DIE EINWIRKUNG VON ÄTHYLENDIAMIN AUF ISOBUTYR-, ISOVALER-, ACETALDEHYD UND GLYOXAL. Monatsh. Chem. 19: 609–626. 1898.

Ethylenediamine is prepared from ethylene dichloride and ammonia.

KONOWALOFF, M. (219)
[NEW COMPOUNDS OF ALUMINUM HALIDES WITH ORGANIC SUBSTANCES. SYNTHESIS OF THIO-COMPOUNDS. I.] Zhur. Russ. Fiz.-Khim. Obshch. 30: 12–22. 1897.

A solution of aluminum chloride in carbon disulphide treated with ethylene dichloride forms the compound $AlCl_3.C_2H_4Cl_2CS_2$.

KOPP, H. (220)
BEITRÄGE ZUR STÖCHIOMETRIE DER PHYSIKALISCHEN EIGENSCHAFTEN CHEMISCHER VERBINDUNGEN. Liebigs Ann. Chem. 96: 1–36, 153–185, 303–335. 1885. (Ethylene dichloride as Chlorelayl, pp. 22, 310, 312, 326.)

Ethylene dichloride is one of the substances considered in obtaining the boiling point difference corresponding to the radical CH_2. The specific volume of ethylene dichloride is studied.

KOPP, H. (221)
UEBER DIE MOLECULARVOLUME VON FLÜSSIGKEITEN. Liebigs Ann. Chem. 250: 1–117. 1889. (Ethylene dichloride, pp. 73–74, 98, 101–104.)
The molecular volume of ethylene dichloride is studied.

KRAEMER, G. (222)
UEBER DIE NEBENPRODUCTE, WELCHE BEI DER FABRIKATION DES CHLORALS ENTSTEHEN. Ber. Deut. Chem. Gesell. 3: 258–262. 1870.
Ethylene dichloride is obtained as a by-product in the manufacture of chloral.

——— (223)
UEBER EINE NEUE BILDUNGSWEISE DES COLLIDIN. Ber. Deut. Chem. Gesell. 3: 262–264. 1870.
Ethylene dichloride does not lend itself to the preparation of collidine with the ease and simplicity of ethylidene chloride.

KRAUS, C. A., and BRAY, W. C. (224)
A GENERAL RELATION BETWEEN THE CONCENTRATION AND THE CONDUCTANCE OF IONIZED SUBSTANCES IN VARIOUS SOLVENTS. Jour. Amer. Chem. Soc. 35: 1315–1434. 1913.
The conductance of solutions of substituted ammonium salts in ethylene dichloride is discussed. Physico-chemical data are given.

KRAUSS, R. B. (225)
ON THE USE OF LARGE GLASS-STOPPERED CONTAINERS IN AUTOCLAVING. Jour. Amer. Chem. Soc. 39: 1512–1513. 1917.
The use of large glass-stoppered containers in an autoclave for the preparation of ethylene diamine from ethylene dichloride and ammonia is discussed.

KREMANN, R. (226)
ÜBER DIE ENERGIEÄNDERUNGEN BINÄRER SYSTEME. VII. MITTEILUNG: ÜBER DIE MISCHUNGSWÄRMEN BINÄRER GEMISCHE. Monatsh. Chem. 37: 11–24. 1916.
The heat of mixing of the pair benzene and ethylene dichloride is studied. The approximate agreement between the observed and calculated heat changes indicates that the mixture may be regarded as a normal one.

KRÖBER, E. (227)
ZUM MOLEKULARZUSTAND VON FLÜSSIGKEITEN UND LÖSUNGEN. Ztschr. Phys. Chem. 93: 641–692. 1918–19. (Ethlyene dichloride, p. 686.)
The molecular volume of ethylene dichloride is given as 85.3, the atomic concentration at zero as 1,035, and the atomic concentration at the boiling point as 938.

KUDICKE, R., and WEISE, W. (228)
UNTERSUCHUNGEN ÜBER DIE WURMTÖTENDEN EIGENSCHAFTEN VON HALOGENVERBINDUNGEN DES METHANS, ÄTHANS UND ÄTHYLENS. Arch. Schiffs-Tropen-Hyg. 30: 231–239. 1926.
The anthelmintic action of ethylene dichloride is studied and compared with that of other halogenated compounds of methane, ethane, and ethylene. Against larvae of *Strongyloides stercoralis*, ethylene dichloride is effective in a concentration of 2.8 centimeters per 1,000 cubic centimeters.

LAAR, J. J. VAN. (229)
ÜBER DAMPFSPANNUNGEN VON BINÄREN GEMISCHEN. Ztschr. Phys. Chem. 72: 723–751. 1910.
The vapor pressure of the mixture benzene-ethylene dichloride is discussed.

——— (230)
ZUR THEORIE DER DAMPFSPANNUNGEN VON BINÄREN GEMISCHEN. ERWIDERUNG AN HERRN F. DOLEZALEK. Ztschr. Phys. Chem. 83: 599–608. 1913.
The critical pressure of ethylene dichloride (53 atmospheres) is considered in a discussion of that of each component of the benzene-ethylene dichloride mixture.

LAAR, J. J. VAN. (231)
OVER DE ADDITIVITEIT DER WAARDEN VAN B EN $\sqrt{a}$ DER TOESTANDSVERGELJIKING, EN OVER DE GRONDWAARDEN DEZER GROOTHEDEN BIJ VERSCHILLENDE ELEMENTEN IN VERBAND MET HET PERIODIEK SYSTEEM. K. Akad. Wetensch. Amsterdam, Verslag. Wis. en Natuurk Afd. 24 (2): 1284–1300. 1915–16. [Also Die Additivität der Grössen b und $\sqrt{a}$ der Zustandsgleichung und die fundamentalen Werte dieser Grössen für verschiedene Elemente im Zusammenhang mit dem periodischen System. Ztschr. Anorgan. u Allg. Chem. 104: 66–76. 1918.]

The additiveness of the quantities b and $\sqrt{a}$ of Van der Waal's equation of state is studied.

——— (232)
OVER DE GRONDWAARDEN DER GROOTHEDEN B EN $\sqrt{A}$ BIJ VERSCHILLENDE ELEMENTEN, IN VERBAND MET HET PERIODIEK SYSTEEM. II. KWIK EN ANTIMONIUM. ALGEMEENE METHODEN. K. Akad. Wetensch. Amsterdam, Verslag, Wis. en Natuurk. Afd. 24 (2): 1635–1657. 1915–16. [Also Die Fundamentalwerte der Grössen b und $\sqrt{a}$ verschiedener Elemente in Verbindung mit dem periodischen System. II. Quecksilver-und Antimon. Allgemeine Methoden. Ztschr. Anorgan. u. Allg. Chem. 104: 81–97. 1918.]

The fundamental values of the quantities b and $\sqrt{a}$ of the equation of state are determined for ethylene dichloride.

——— (233)
OVER DE ONGELDIGHEID VAN DEN Z. G. "VALENTIE-REGEL" VAN MATHEWS. K. Akad. Wetensch. Amsterdam, Verslag Wis. en Natuurk. Afd. 24 (2): 1300–1304. 1915–16. [Also Über die Geltung von Mathews sogenanntem Valenzgesetz. Ztschr. Anorgan. u. Allg. Chem. 104:77–80. 1918.]

Data are used from previous work of the author to support his disagreement with Mathews's rule.

LADENBURG, A., and ABEL, J. (234)
NACHTRAG ZU DER MITTHEILUNG ÜBER DAS AETHYLENIMIN. Ber. Deut. Chem. Gesell. 21: 2706–2707. 1888.

Diethylenediamine is prepared by the reaction of ethylene dichloride on ethylenediamine.

LANDAU, B. (235)
STUDIEN ÜBER ROTATIONSDISPERSION. II. ÜBER DEN EINFLUSS DES LÖSUNGSMITTELS AUF DAS DREHUNGSVERMÖGEN DES ÄPFELSAUREN DIMETHYLS. Ztschr. Phys. Chem. 75: 129–218. 1910–11.

The optical rotation of d-diethyl tartrate in a number of solvents is studied. Chlorine organic derivatives, including ethylene dichloride, show a tendency to reverse the rotation of the ester. The experimental results obtained at a number of concentrations with a number of different lights are tabulated, and a curve is plotted showing the relations observed.

LANDOLT, H. (236)
UEBER DIE MOLECULARREFRACTION FLÜSSIGER ORGANISCHER VERBINDUNGEN. Sitzber. Akad. Wiss. Berlin 1: 64–91. 1882. [Also in Liebigs Ann. Chem. 213: 75–112. 1882.]

The molecular refraction of ethylene dichloride is studied.

——— and JAHN, H. (237)
ÜBER DIE MOLEKULARREFRAKTION EINIGER EINFACHER ORGANISCHER VERBINDUNGEN FÜR STRAHLEN VON UNENDLICH GROSSER WELLENLÄNGE. Sitzber. Akad. Wiss. Berlin 2: 729–758. 1892. [Also in Ztschr. Phys. Chem. 10: 289–320. 1892.]

The molecular refraction of ethylene dichloride is studied.

LAURENT, M. A. (238)
ESSAI SUR L'ACTION DU CHLORE SUR LA LIQUEUR DES HOLLANDAIS ET SUR QUELQUES ETHERS. Ann. Chim. Phys. (2) 63: 377–389. 1836. [Also in Liebigs Ann. Chem. 22: 292–305. 1883.]

The method of causing the reaction and its products are described.

LAUTERBACH, P. (239)
NITRIREN VON FETTKÖRPERN. Ber. Deut. Chem. Gesell. 12: 677. 1879.

After long heating with an excess of fuming nitric acid in a closed tube ethylene dichloride yields a pungent oil, which with alcoholic potash forms at first a red and then a yellow precipitate.

LEAN, B., and LEES, F. H. (240)
INTERACTION OF ETHYLENE CHLORIDE, ETHYLIC MALONATE, AND SODIUM ETHOXIDE. Jour. Chem. Soc. [London] 71: 1062–1068. 1897.

The products of the reaction of ethylene dichloride, ethyl malonate, and sodium ethoxide are discussed.

——— and LEES, F. H. (241)
THE INTERACTION OF ETHYLENE DICHLORIDE AND ETHYLIC SODIOMALONATE. Chem. Soc. Proc. [London] No. 182, pp. 160–161. 1896–97.

The products of the reaction of ethylene dichloride and ethyl sodiomalonate are discussed.

LECAT, M. (242)
FORMULES POUR LA PRÉVISION DES CONSTANTES AZÉOTROPIQUES DES SYSTÈMES FORMÉS D'ALCOHOL ET D'HALOGÉNURE. Compt. Rend. Acad. Sci. [Paris] 184: 816–818. 1927.

The ethyl alcohol-ethylene dichloride mixture is one of a number of azeotropic systems studied.

——— (243)
NOUVEAU BINAIRE MÉLANGE AZEOTROPIQUE. Ann. Soc. Sci. Bruxelles (B) 47 (Pt. I): 108–114. 1927.

Ethylene dichloride forms azeotropic mixtures.

——— (244)
NOUVEAUX AZÉOTROPES BINAIRES. CINQUIÈME LISTE. Rec. Trav. Chim. Pays-Bas 46: 240–247. 1927.

Ethylene dichloride forms a nonazeotropic system with propyl oxide.

LEDUC, A. (245)
DENSITÉS DE QUELQUES GAZ ET VAPEURS. Compt. Rend. Acad. Sci. [Paris] 155: 206–207. 1912.

The calculated density for ethylene dichloride vapor at 100° is found to be 3.519.

LEISER, R. (246)
ELEKTRISCHE DOPPELBRECHUNG DER KOHLENSTOFFVERBINDUNGEN. Abhandl. Deut. Bunsen-Gesell. Angew. Phys. Chem. 4: 1–71. 1910.

The electrical double refraction of ethylene dichloride is studied.

LEROY, G. A. (247)
SUR L'IMPÉRMEABILISATION IMPROVISÉE DES VÊTEMENTS MILITAIRES. Compt. Rend. Acad. Sci. [Paris] 159: 633–634. 1914.

Ethylene dichlorde may be added to the solvents for wool fat used in water-proofing military garments in order to make the solutions nonflammable.

LEWIS, W. C. McC. (248)
ON THE LATENT HEAT OF VAPORIZATION OF LIQUIDS. Phil. Mag. (6) 22: 268–276. 1911.

The latent heat of vaporization per gram at 0° C. for ethylene dichloride is 85.4 calories, observed, and 89.3 calories, calculated.

——— (249)
BEITRÄGE ZUM STUDIUM DES FLÜSSIGEN ZUSTANDS. I. EIN AUSDRUCK FÜR DIE LATENTE VERDAMPFUNGSWÄRME. Ztschr. Phys. Chem. 78: 24–38. 1911–12.

Ethylene dichloride is one of the substances used in a study of the latent heat of vaporization of liquids in connection with its compressibility and coefficient of expansion.

——— (250)
BEITRÄGE ZUM STUDIUM DES FLÜSSIGEN ZUSTANDS. EINE BERICHTIGUNG. Ztschr. Phys. Chem. 81: 626–628. 1912–13.

Values for the latent heat of expansion of ethylene dichloride at 0° are given.

LIDHOLM, J. H. (251)
VERFAHREN ZUR DARSTELLUNG VON DI- UND TETRACHLORACETYLEN AUS ACETYLENE UND CHLOR UNTER ANWENDUNG EINES INDIFFERENTEN VERDÜNNUNGSMITTELS. German Patent 201705, issued September 9, 1908.

In the chlorination of acetylene, a small amount of ethylene dichloride may be formed.

LIEBEN, A. (252)
UEBER ENTSTEHUNG VON JODOFORM UND ANWENDUNG DIESER REACTION IN DER CHEMISCHEN ANALYSE. Liebigs Ann. Chem. 7, Sup.: 218–236. 1870.

Ethylene dichloride does not form iodoform with iodine and potassium hydroxide.

LIEBIG, J. (253)
UEBER CHLORÄTHER IM MAX. UND SCHWEREN SALZÄTHER. Mag. Pharm. (Geiger) 34: 49–55. 1831.

Liebig finds that the oily compound obtained by the action of chlorine on ethylene ("Chloräther oder Chlornaphtha im Maximum von Chlor") is not the same as chloral ("schwere Salzäther oder schwere Salznaphtha"), which is obtained by the action of chlorine on alcohol or ether. This disproves the result of Morin's investigations on these compounds.

——— (254)
UEBER DIE VERBINDUNGEN, WELCHE DURCH DIE EINWIRKUNG DES CHLORS AUF ALKOHOL, AETHER, ÖLBILDENES GAS UND ESSIGGEIST ENSTEHEN. Ann. Pharm. 1: 182–230. 1832. [Also Ann. Chim. et Phys. (2) 49: 146–204. 1832.]

Ethylene dichloride is called in the article "Oel des ölbildenes Gas" and "Chloräther im Maximum." Its preparation, properties, and analyses are discussed. The specific gravity at 18° C. is 1.274, the boiling point is 82.4°. The formula is given as $C_8H_{15}Cl_8$.

——— (255)
UEBER DIE CONSTITUTION DES AETHERS UND SEINER VERBINDUNGEN. Ann. Pharm. 9: 1–39. 1834.

New experiments by Liebig appear to confirm his earlier data. The formula of ethylene dichloride (chloräther) is given as $3ECl_2+2C_2Cl_5$, where E (ethyl) $=C_4H_{10}$, or condensed, $C_8H_{15}Cl_8$.

——— (256)
[FOOTNOTE ON THE REACTION OF ETHYLENE DICHLORIDE AND POTASSIUM.] Liebigs Ann. Chem. 14: 37. 1835.

The reaction of potassium when heated with ethylene dichloride is said to be analogous to that of potassium hydroxide.

LIMPRICHT, H. (257)
LEICHTE DARSTELLUNG DES ELAYLCHLORÜRS. Liebigs Ann. Chem. 94: 245–246. 1855.

The methods of preparing ethylene dichloride (Elaylchlorür) from ethylene and chlorine or from ethylene and antimony chloride are not only costly but take considerable time to prepare in large amounts. As an improvement a method of preparing ethylene dichloride from ethylene, manganese dioxide, sodium chloride, and sulphuric acid is proposed.

LINDSAY, W. G. (258)
SOLUTION OF ACETYLCELLULOSE IN ETHYLENE CHLORIDE AND ALCOHOL. U. S. Patent 1027616, issued May 28, 1912.

A mixture of ethylene dichloride and alcohol is used as a solvent for acetylcellulose.

LINEBARGER, C. E. (259)
ON THE SPECIFIC GRAVITIES OF MIXTURES OF NORMAL LIQUIDS. Amer. Chem. Jour. 18: 429–453. 1896.

The specific gravity of mixtures of ethylene dichloride and benzene at 20 C. is determined by experiment and by calculation.

LIPPMANN, A. (260)
ELEKTRISCHE DOPPELBRECHUNG IN FLÜSSIGKEITEN UND IHRE BEZIEHUNG ZU CHEMISCHER ZUSAMMENSETZUNG UND KONSTITUTION. Ztschr. Elektrochem. 17: 15–20. 1911.

The electrooptical constant for ethylene dichloride is determined, and the results are presented in a table.

LÖSSNER, C. W. (261)
UEBER DAS CHEMISCHE VERHALTEN VON FÜNFFACH-CHLORANTIMON ZU EINIGEN ORGANISCHEN VERBINDUNGEN. Jour. Prakt. Chem. (2) 13: 418–436. 1876.

Ethylene dibromide and antimony pentachloride react in molecular amounts to form ethylene chlorobromide, but if 1 molecule of the dibromide to 2 molecules of the pentachloride is used ethylene dichloride is formed. Phosphorus pentachloride, when used in the same way, does not give any reaction.

LÖWIG, C., and WEIDMANN, S. (262)
BEITRÄGE ZUR ORGANISCHEN CHEMIE. Ann. Phys. Chem. (Poggendorff) 46: 45–91. 1839.

The reaction of potassium sulphide on ethylene dichloride is studied.

——— and WEIDMANN, S. (263)
UEBER DIE EINWIRKUNG DES CHLORÄTHERINS AUF SCHWEFELKALIUMS. Ann. Phys. Chem. (Poggendorff) 49: 123–133. 1840. [Also in Liebigs Ann. Chem. 36: 321–332. 1840.]

The reactions of ethylene dichloride (chlorätherin) with several sulphides of potassium are studied.

LONGINESCU, G. G., and CHABORSKI, G. (264)
L'ASSOCIATION MOLÉCULAIRE CONSIDÉRÉE COMME PHÉNOMENE DE CONCENTRATION MOLAIRE. Bul. Chim. Pură Appl. [Bucharest] 30: 3–29. 1927.

Physico-chemical data are given.

LOSSEN, W. (265)
UNTERSUCHUNGEN ÜBER DIE SPECIFISCHEN VOLUMINA FLÜSSIGER VERBINDUNGEN. I. EINLEITUNG. Liebigs Ann. Chem. 214: 81–137. 1882.

The specific volume of ethylene dichloride is discussed.

——— (266)
UNTERSUCHUNGEN ÜBER DIE PHYSIKALISCHEN EIGENSCHAFTEN FLÜSSIGER VERBINDUNGEN. XIII. FORMELN ZUR BERECHNUNG DER MOLECULARVOLUMINA ORGANISCHER VERBINDUNGEN. Liebigs Ann. Chem. 254: 42–83. 1889.

The observed molecular volume is given as 85.3 (Kopp) and the calculated as 87.4.

LOWRY, T. M., and ABRAM, H. H. (267)
THE ROTATORY DISPERSIVE POWER OF ORGANIC COMPOUNDS. PART VII. COMPLEX ROTATORY DISPERSION IN METHYL TARTRATE. Jour. Chem. Soc. [London] 107: 1187–1195. 1915.

Specific rotatory power of a 25 per cent solution of methyl tartrate in ethylene dichloride is shown for different wave lengths.

——— and DICKSON, T. W. (268)
THE ROTATORY DISPERSIVE POWER OF ORGANIC COMPOUNDS. PART VI. COMPLEX ROTATORY DISPERSION IN ETHYL TARTRATE. Jour. Chem. Soc. [London] 107: 1173–1187. 1915.

The specific rotatory power of solutions of ethyl tartrate in ethylene dichloride is shown for different wave lengths.

LÜDERSDORFF, F. (269)
UEBER AETHERBILDUNG DURCH CONTAKT-ELEKTRICITÄT. Ann. Phys. Chem. (Poggendorff) 19: 77–92. 1830.

Ethylene (ölbildenes Gas) and euchlorine (ClO_2 and Cl) in like volumes form the same liquid (Chloräther im Maximum von Chlor) as results from chlorine and ethylene, that is, ethylene dichlorine.

MCCALLUM, W. B. (270)
PLANT PHYSIOLOGY AND PATHOLOGY. Ariz. Agr. Expt. Sta. Ann. Rpt. 20: 582–586. 1909.

Ethylene dichloride is among the most effective substances used in experiments on bringing dormant potato tubers into activity.

MACGOWAN, G. (271)
THE ACTION OF THE CHLORIDES OF IODINE ON ETHYLEN AND ACETYLEN. (Abstract.) Chem. News 38: 32. 1878.

On passing ethylene slowly over pure iodine trichloride at 0° C. ethylene dichloride and ethylene chloroiodide are formed.

MAILHE, A. (272)
DÉCOMPOSITION CATALYTIQUE DES HYDROCARBURES HALOGÉNÉS. Caoutchouc et Guttapercha 18: 10908–10911. 1921. [Also in Matieres Grasses 13: 5855–5858. 1921.]

The substitution or elimination of the halogen by hydrogen in halogenated hydrocarbons, including ethylene dichloride, is reviewed.

MAJIMA, R., and SIMANUKI, H. (273)
ON THE ACTION OF THIONYLCHLORIDE ON POLYHYDRIC ALCOHOLS. Imp. Acad. Tokyo Proc. 2: 544–546. 1927.

A small amount of ethylene dichloride is formed in the action of thionylchloride on glycol.

MALOFF, G. A. (274)
ZUR TOXIKOLOGIE EINIGER CHLORDERIVATE DES METHANS UND ÄTHANS. Arch. Expt. Path. u. Pharmakol. 134: 168–172. 1928.

Experiments performed on dogs show that ethylene dichloride when used as an inhaled narcotic does not change the fat content of the liver.

MARGOSCHES, B. M. (275)
ÜBER KOHLENWASSERSTOFF-UND KOHLENSTOFFCHLORIDE I. Chem.-Zgt. 37: 509–511, 519–520. 1913.

Ethylene dichloride is considered in a discussion on the lack of system and inconsistencies in the nomenclature found in chemical literature, particularly with reference to the chlorinated hydrocarbons.

——— HINNER, W., and FRIEDMANN, L. (276)
ÜBER KOHLENWASSERSTOFF-UND KOHLENSTOFFCHLORIDE. III. DAS JODLÖSUNGSVERMÖGEN CHLORIERTER KOHLENWASSERSTOFFE DER FETTREIHE UND HIERAUS SICH ERGEBENDE BEZIEHUNGEN. Ztschr. Anorgan u. Allg. Chem. 137: 81–90. 1924.

The solubility of iodine in ethylene dichloride at different temperatures is given, and comparisons are made with those of other chlorinated hydrocarbons.

MARKS, E. C. R. (277)
MANUFACTURE OF DICHLOROETHANE. British Patent 136489, issued in 1919.

Ethylene dichloride is prepared by the reaction of ethylene upon liquid chlorine.

MASCART. (278)
SUR LA RÉFRACTION DES CORPS ORGANIQUES CONSIDÉRÉS A L'ÉTAT GAZEUX. Compt. Rend. Acad. Sci. [Paris] 86: 1182–1185. 1878.

The refraction of ethylene dichloride is studied.

MATHEWS, J. H. (279)
THE ACCURATE MEASUREMENT OF HEATS OF VAPORIZATION OF LIQUIDS. Jour. Amer. Chem. Soc. 48: 562–576. 1926.

The heat of vaporization of ethylene dichloride at 82.21° C. is measured and found to be 77.34 calories per gram. The constants, determined as a test of purity, were: d 20/4, 1.2541; n 20/D, 1.44268; boiling point at 760 millimeters, 83.65°–83.70° C.

MATTER, O. (280)
POLYHYDRIC ALCOHOLS. U. S. Patent 1237076, issued in 1917.

Glycol is prepared by the hydrolysis of ethylene dichloride with an alkali or alkali salt at high temperatures.

——— (281)
VERFAHREN ZUR DARSTELLUNG VON ÄTHYLIDENÄTHYLENDISULFID. German Patent 313650, issued in 1919.

Ethylene sulphides are prepared by the action of ethylene dichloride on aqueous or alcoholic alkali sulphide solutions. Ethylene dichloride may be used in the preparation of ethylidene-ethylene disulphide.

——— (282)
VERFAHREN ZUR HERSTELLUNG VON MEHRWERTIGEN ALKOHOLEN. German Patent 299074, issued in 1920.

The preparation of ethylene glycol from ethylene dichloride and sodium bicarbonate in a closed vessel at 130° to 140° is described.

MAUMENÉ, E. J. (283)
NOTE RELATIVE À L'ÁCTION DU POTASSIUM SUR LA LIQUEUR DES HOLLANDAIS. Compt. Rend. Acad. Sci. [Paris] 68: 837. 1869.

The difference in the results of Dumas and Liebig is explained by the difference in the proportion of potassium to ethylene dichloride.

——— (284)
ACTION DU POTASSIUM ET DE LA LIQUEUR DES HOLLANDAIS. Compt. Rend. Acad. Sci. [Paris] 68: 931–932. 1869.

Equations and experimental evidence are given to explain the difference in the results of Dumas and Liebig as owing to the difference in the proportion of the two reacting substances.

MERSEREAU, G. (285)
CHLORINATED HYDROCARBONS FROM OIL GAS. U. S. Patent 1224485, issued May 1, 1917.

A method of producing ethylene dichloride by chlorinating oil gas from petroleum is described.

——— (286)
CHLORINATING UNSATURATED HYDROCARBONS IN MIXTURES. U. S. Patent 1509603, issued September 23, 1924.

The method and apparatus are described for chlorinating a mixture of gaseous hydrocarbons such as that obtained by cracking oils. The unsaturated hydrocarbons are converted into chlorine derivatives, which include ethylene dichloride.

MEYER, K. H. (287)
VERFAHREN ZUR DARSTELLUNG VON GLYKOLDIACETAT. German Patent 332677, issued in 1921.

Ethylene dichloride is heated with anhydrous sodium acetate in the presence of a small amount of glycol diacetate.

MEYER, V., and MÜLLER, F. (288)
BEOBACHTUNGEN ÜBER SUBSTITUTION IN DER ALIPHATISCHEN REIHE. Ber. Deut. Chem. Gesell. 24: 4247–4250. 1891.

By heating equivalent amounts of ethyl chloride and antimony pentachloride in a closed tube in a water bath much ethylene dichloride is obtained.

——— and MÜLLER, F. (289)
UNTERSUCHUNGEN ÜBER SUBSTITUTION IN DER ALIPHATISCHEN REIHE. Jour. Prakt. Chem. (n. F.) 46: 161–188. 1892.

Ethyl chloride when heated in a closed tube with antimony pentachloride forms ethylene dichloride. Ethylene dichloride is hardly attacked by antimony pentachloride during 12 hours of heating in a water bath, and there is no action worthy of note even on further heating to 140°.

MIRANDE, M. (290)
DE L'ACTION DES VAPEURS SUR LES PLANTES VERTES. Compt. Rend. Acad. Sci. [Paris] 151: 481–483. 1910.

Ethylene dichloride vapor produces blackening of the leaves and liberation of hydrocyanic acid in the pink laurel.

MORGAN, J. L. R., and DAGHLIAN, G. K. (291)
THE WEIGHT OF A FALLING DROP AND THE LAWS OF TATE. VI. THE DROP WEIGHTS OF TWENTY NEW NON-ASSOCIATED LIQUIDS, AND THE MOLECULAR WEIGHTS CALCULATED FOR THEM. Jour. Amer. Chem. Soc. 33: 672–684. 1911. [Also in Ztschr. Phys. Chem. 78: 169–184. 1911–12.]

According to the new definition of normal molecular weight ethylene dichloride is to be regarded as perfectly nonassociated as is benzene. The value of t_c calculated from this definition is not in agreement with the observed critical temperature.

MORIN. (292)
MEMOIRE SUR L'ACTION DU CHLORE SUR L'HYDRÒGENE BICARBONÉ. Ann. Chim. et Phys. (2), 43: 225–244. 1830. [Also in Ann. Phys. (Poggendorff) 19: 61–77. 1830.]

Ethylene dichloride (hydrocarbure de chlore) is made by the action of chlorine on ethylene (hydrogène bicarboné). Experiments are performed to show that ethylene dichloride is not the result of the combination of 1 atom of chlorine, and 1 atom of ethylene, but of 1 atom of "protochlorure de carbone" and 3 atoms of ethylene.

MORTIMER, F. S. (293)
MELTING POINT, LATENT HEAT OF FUSION AND SOLUBILITY. Jour. Amer. Chem. Soc. 44: 1416–1429. 1922.

The solubility of naphthalene in ethylene dichloride is studied with reference to its nonideality, and a method for its calculation is given. This solution is found to be almost ideal.

MOUNEYRAT, A. (294)
ACTION DU CHLORE SUR LE CHLORURE D'ÉTHYLÈNE EN PRÉSENCE DU CHLORURE D'ALUMINIUM. Bul. Soc. Chim. France (3) 19: 445–448. 1898. [Also in Compt. Rend. Acad. Sci. [Paris] 126: 1805–1808. 1898.]

Ethylene dichloride heated to 85° with aluminum chloride forms acetylene and hydrochloric acid. If a stream of chlorine is conducted through the substances, acetylidene tetrachloride and acetylene tetrachloride are formed.

——— (295)
CHLORURATION DE L'ACÉTYLÈNE. Bul. Soc. Chim. France (3) 19: 448–452. 1898. [Also in Compt. Rend. Acad. Sci. [Paris] 126: 1805–1808. 1898.]

Ethylene dichloride may be used in a safe method for the preparation of large amounts of acetylene tetrachloride, $CHCl_2$–$CHCl_2$. Ethylene dichloride, acetylene, chlorine, and aluminum chloride are the reacting substances, and acetylene tetrachloride is formed partly by the addition of chlorine to acetylene and partly by the chlorination of ethylene dichloride.

——— (296)
PRÉPARATION DU TÉTRACHLORURE D'ACÉTYLÈNE. Bul. Soc. Chim. France (3) 19: 452–454. 1898. [Also in Compt. Rend. Acad. Sci. [Paris] 126: 1807–1808. 1898.]

The method of preparing large amounts of acelytene tetrachloride by using ethylene dichloride is further given in detail.

——— (297)
NOUVELLE MÉTHODE GÉNÉRALE DE PRÉPARATION DES CARBURES D'HYDROGÈNE CHLORÉS, BROMÉS ET CHLOROBROMÉS DE LA SÉRIE ACYCLIQUE. Ann. Chim. et Phys. (7) 20: 485–574. 1900. (Ethylene dichloride, pp. 503–510, 515.)

Studies are made of the action of aluminum chloride, and of chlorine in the presence of aluminum chloride, on ethylene dichloride.

MÜLLER, J. (298)
VERGLEICHENDE UNTERSUCHUNGEN ÜBER DIE NARKOTISCHE UND TOXISCHE WIRKUNG EINIGER HALOGEN-KOHLENWASSERSTOFFE. Arch. Expt. Path. u. Pharmakol. 109: 276–294. 1925.

Properties of ethylene dichloride are given. The narcotizing effect on white mice of ethylene dichloride and of other compounds is tested, and their relative values are determined by comparison with chloroform. It corresponds to chloroform in its narcotic and toxic effects. A table is given showing the results obtained by a number of workers on the effect of ethylene dichloride on bacteria, yeast fermentation, hemolysis, frog heart, fish, tadpoles, frogs, and mice.

MÜLLER, P. A. (299)
UEBER DAS VERHÄLTNISS DER SPECIFISCHEN WÄRMEN BEI GASEN UND DÄMPFEN. Ann. Phys. Chem. (2) 18: 94–119. 1883.

The specific heat of ethylene dichloride is studied.

MUMFORD, S. A., and PHILLIPS, J. W. C. (300)
OBSERVATIONS ON THE CHLORINATION PRODUCTS OF BETA-BETA-DICHLORODIETHYL SULPHIDE. Jour. Chem. Soc. [London] 1928: 155–162. 1928.

Physical properties of ethylene dichloride are given and compared, together with those of its chlorination products, with β, β'-dichlorodiethyl sulphide and its chlorination products.

NADEJDINE, A. (301)
UEBER DEN KRITISCHEN PUNKT. Beibl. Ann. Phys. Chem. 7: 678–681. 1883.

See Zhouk, K.

NADEŽDHIN, A. (302)
ÜEBER DIE AUSDEHNUNG DER FLÜSSIGKEITEN UND DEN UEBERGANG DER KÖRPER AUS DEM FLÜSSIGEN IN DEN GASFORMIGEN ZUSTAND. Repertorium Phys. 23: 617–649. 1887. (Ethylene dichloride p. 628, 631, 639.)

Critical data are determined for ethylene dichloride (Chloräthylen).

NATANSON, J. (303)
UEBER SUBSTITUIRUNG DER ALDEHYDRADICALE IM AMMONIAK. Liebigs Ann. Chem. 92: 48–59. 1854.

The formation of acetylammonium oxide by the reaction of ammonia and ethylene dichloride (Chlorelayl or Elaylchlorid) is studied.

——— (304)
UEBER DAS ACETYLAMIN. Liebigs Ann. Chem. 98: 291–301. 1856.

Ethylene dichloride (Chlorelayl) is used in the preparation of acetylamine. Acetylaniline is prepared from ethylene dichloride and aniline.

NEWCOMER, H. S. (305)
THE X-RAY FLUORESCENCE OF CERTAIN ORGANIC COMPOUNDS. Jour. Amer. Chem. Soc. 42: 1997–2007. 1920.

The visible fluorescence under action of X rays is given.

NORRIS, J. F., THOMAS, R., and BROWN, B. M. (306)
ÜBER DIE EINWIRKUNG VON METALLEN AUF KETONCHLORIDE DER AROMATISCHEN REIHE UND ÜBER DIE EIGENSCHAFTEN VON VERBINDUNGEN DES TYPUS $R_2CCL-CCLR_2$. Ber. Deut. Chem. Gesell. 43: 2940–2959. 1910.

The preparation of tetraaryl derivatives from ethylene dichloride is discussed.

OERTLY, E., and MYERS, R. G. (307)
A NEW THEORY RELATING CONSTITUTION TO TASTE. Jour. Amer. Chem. Soc. 41: 855–867. 1919.

The taste of ethylene dichloride is described as sweetish. Its chemical constitution according to its taste classification is given.

OTT, K. (Chemische Fabriken vorm. Weiler-ter-Meer.) (308)
HERSTELLUNG VON CHLORÄTHYLSCHWEFELSÄURECHLORID. German Patent 374141, issued April 20, 1923.

Chloroethylsulphuryl chloride is formed by treating ethylene dichloride with fuming sulphuric acid with or without a catalyst. Dichlorodiethyl sulphate is also obtained.

PAGE, A. G. (309)
UEBER ANORGANISCHE CHLORIDE ALS CHLORÜBERTRÄGER. Liebigs Ann. Chem. 225: 196–211. 1884. [Also in Bul. Soc. Chim. France (2) 44: 63–65. 1885.]

Ethylene dichloride is chlorinated in the presence of molybdenum pentachloride.

PAGLIANI, S. (310)
SULLE RELAZIONI ESISTENTI FRA ALCUNE PROPRIETÀ TERMICHE. IL COEFFICIENTE MOLECOLARE E LA COSTITUZIONE DEI COMPOSTI ORGANICI. Gaz. Chim. Ital. 46: (2) 310–334. 1916.

The thermal properties of ethylene dichloride are studied.

PAHLAVOUNI, E. (311)
RECHERCHES SUR LA THÉORIE DES SOLUTIONS CONCENTRÉES. IV. LA MÉTHODE DE M. A. ROSANOFF POUR L'ÉTUDE DE LA COMPOSITION DE LA PHASE VAPEUR EN ÉQUILIBRE AVEC UN MÉLANGE BINAIRE DE LIQUIDES VOLATILS. Bul. Soc. Chim. Belg. 36: 533–547. 1927.

Studies are made of the benzene-ethylene dichloride mixture, ethylene dichloride-cyclohexane mixture, and ethylene dichloride-acetone mixture at different concentrations.

For ethylene dichloride $n\frac{20}{D}$ is given as 1.44507.

PANAS. (312)
ACTION DES INHALATIONS DU CHLORURE D'ÉTHYLÈNE PUR SUR L'OEIL. Compt. Rend. Acad. Sci. [Paris] 107: 921–923. 1888.

The action of ethylene dichloride on the eye, when it is used as an anesthetic, is studied. The results differ from those of Dubois.

PASCAL, P. (313)
UTILISATION DU CHAMP MAGNÉTIQUE COMME RÉACTIF DE LA CONSTITUTION EN CHIMIE ORGANIQUE (4° NOTE). Bul. Soc. Chim. France (4) 7: 45–51 1910. [Also in Recherches magnétochimiques. Ann. Chim. et Phys. (8) 19: 5–70. 1910. (Ethylene dichloride, p. 63.)]

From the formula, diamagnetic susceptibility $S^m = -K \times 10^{-7}$, the value 621 for K is experimentally obtained for ethylene dichloride as compared with the calculated value of 666.

——— (314)
UTILISATION DU CHAMP MAGNÉTIQUE COMME RÉACTIF DE LA CONSTITUTION (13° NOTE). Bul. Soc. Chim. France (4) 11: 159–163. 1912.

The discrepancy between the calculated and observed diamagnetism is discussed.

PATTERSON, T. S., and THOMSON, D. (315)
THE INFLUENCE OF SOLVENTS ON THE ROTATION OF OPTICALLY ACTIVE COMPOUNDS. PART XI. ETHYL TARTRATE IN ALIPHATIC HALOGEN DERIVATIVES. Jour. Chem. Soc. [London] 93: 355–371. 1908. [Also in Chem. Soc. [London] Proc. 23: 263–264. 1907.]

The effect of ethylene dichloride on the rotation of ethyl tartrate is studied.

PAWLEWSKI, B. (316)
UEBER DIE KRITISCHEN TEMPERATUREN EINIGER FLÜSSIGKEITEN. (II. ABHANDLUNG.) Ber. Deut. Chem. Gesell. 16: 2633–2636. 1883.

The critical temperature of ethylene dichloride is about 283°.

PERKIN, W. H. (317)
UEBER DIE MAGNETISCHE CIRCULAR—POLARISATION DER VERBINDUNGEN IM VERHÄLTNISS ZU DEREN CHEMISCHEN CONSTITUTION, MIT BEMERKUNGEN ÜBER DIE DARSTELLUNG UND SPECIFISCHEN GEWICHTE DER UNTERSUCHTEN KÖRPER. Jour. Prakt. Chem. (2) 32: 523–622. 1885. (Ethylene dichloride, p. 571–572, 609, 621.)

Physico-chemical data are given: $d\frac{15°}{15°}$, 1.25991; $d\frac{25°}{25°}$, 1.24800; specific magnetic rotation (14.4°), 1.2569; molecular magnetic rotation, 5.485.

——— (318)
ON MAGNETIC ROTATORY POWER, ESPECIALLY OF AROMATIC COMPOUNDS. Jour. Chem. Soc. Trans. 69: 1025–1257. 1896.

The effect of variation of temperature on rotation is shown and discussed. Specific rotation is given as 1.2564 at 15°; molecular rotation, 5.484; $d\frac{14.4°}{14.4°}$, 1.2606; $d\frac{62.5°}{62.5°}$, 1.2104.

PERKINS, W. H., JR. (319)
THE CIS- AND TRANS-MODIFICATIONS OF 1:2-TETRAMETHYLENE-DICARBOXYLIC ACID, AND 1:2-PENTAMETHYLENEDICARBOXYLIC ACID. Jour. Chem. Soc. [London] 65: 572–591. 1894.

By treating the sodium compound of ethyl malonate with ethylene dichloride instead of the dibromide the yield of ethyl butanetetracarboxylate is much increased.

PERRY, J. H. (320)
THE ADSORPTION OF SOME VAPORS BY ALUMINA GEL. Jour. Phys. Chem. 29: 1462–1468. 1925.

Experiments on the adsorption of ethylene dichloride vapor by alumina gel are described. The saturation value was found to be 3.7 grams per 10 grams of gel.

PETRENKO-KRITSCHENKO, P., and OPOTSKY, V. (321)
ÜBER DAS GESETZ DER PERIODIZITÄT, I. MITTEILUNG: ÜBER DIE AKTIVITÄT ORGANISCHER HALOIDVERBINDUNGEN. Ber. Deut. Chem. Gesell. 59: 2131–2140. 1926.

The activity of ethylene dichloride with the following reagents is studied: Potassium hydroxide, tetramethylammonium hydroxide, barium hydroxide, thallium hydroxide, sodium ethoxide, piperidine, water, ethyl alcohol, silver nitrate, potassium acetate, and potassium thiocyanate.

PETRENKO-KRITSCHENKO, P., TALMUD, D. and B., BUTMY-DE-KATZMAN, W., and GANDELMAN, A. (322)
ÜBER DIE CHEMISCHE AKTIVITÄT. I. ÜBER DIE HALOIDDERIVATE DES METHANS. Ztschr. Phys. Chem. 116: 313–318. 1925.

The activity of ethylene dichloride with potassium hydroxide, alcoholic potash, potassium cyanide, ammonia, and benzylamine is studied.

PICTET, A. (323)
LE CONGRÈS INTERNATIONAL DE GENÈVE POUR LA RÉFORME DE LA NOMENCLATURE CHIMIQUE. Arch. Sci. Phys. et Nat. (3) 27: 485–520. 1892. [Also in Gaz. Chim. Ital. 22 (1): 514–541. 1892.

Ethylene dichloride is named 1, 2-dichlorethane.

PIERRE, I. (324)
RECHERCHES SUR LES PROPRIÉTÉS PHYSIQUES DES LIQUIDES, ET EN PARTICULIER SUR LEUR DILATATION. Ann. Chim. et Phys. (3) 20: 5–53, 1847; 21: 118–153, 1851. [Also in Liebigs Ann. Chem. 64: 168–175, 1848; 80: 125–136, 1851.

Physical properties of ethylene dichloride are given. Its volume at different temperatures is stated, and its coefficient of expansion calculated.

——— (325)
SUR UN NOUVEAU DÉRIVÉ CHLORÉ DE LA LIQUEUR DES HOLLANDAIS. Ann. Chim. et Phys. (3) 21: 439–446. 1847. [Also in Jour. Prakt. Chem. 43: 301–307, 1848; and Pharm. Zentbl. 1847: 799; 1848: 89.]

Work on a new chlorinated derivative of ethylene dichloride is described.

——— (326)
RECHERCHES SUR LES DILATATIONS. SIXIÈME MÉMOIRE. Ann. Chim. et Phys. (3) 33: 199–244. 1851.

Ethylene dichloride is chlorinated.

PLAGGE, H. (327)
VERGLEICHENDE UNTERSUCHUNG ÜBER DIE GÄRUNGHEMMENDE WIRKUNG EINIGER CHLORDERIVATE DES METHANS, ÄTHANS UND ÄTHYLENS. Biochem. Ztschr. 118: 129–143. 1921.

Ethylene dichloride is toxic to the yeast cell. The degree of its effect is dependent not on the concentration of the solution, but on the relation of the amount of toxic compound as compared to the amount of yeast. Constants used are: Specific gravity, 1.2521; boiling point, 83.5° C.; solubility, 8.51 grams per liter of water.

PLÖTZ, W. (328)
VERGLEICHENDE UNTERSUCHUNGEN ÜBER DIE HÄMOLYTISCHE WIRKUNG EINIGER CHLORDERIVATE DES METHANS, ÄTHANS UND ÄTHYLENS. Biochem. Ztschr. 103: 243–270. 1920.

Some properties are given, including specific gravity, 1.2521; and boiling point, 83.5°.

Hemolytic activity is studied. The lack of hemolytic power of the ethylene derivatives is attributed to the fact that their solubilities are below the concentration necessary for action.

POSNJAK, E. (329)
UEBER DEN QUELLUNGSDRUCK. Kolloidchem. Beihefte 3: 417–456. 1912.

The swelling of rubber in various organic solvents, including ethylene dichloride, is measured.

PŘIBRAM, R., and HANDL, A. (330)
ÜBER DIE SPECIFISCHE ZÄHIGKEIT DER FLÜSSIGKEITEN UND IHRE BEZIEHUNG ZUR CHEMISCHEN CONSTITUTION. Sitzber. Akad. Wiss. Wien, Math. Naturw. Kl. 78 (2): 113–164. 1878. (Ethylene dichloride, p. 134, 145, 146.)

The viscosity of ethylene dichloride is studied.

PRYTZ, K. (331)
UNDERSØGELSER OVER LYSETS BRYDNING I DAMPE OG TILSVARENDE VAEDSKER. K. Dansk. Vidensk. Selsk. Skr., Naturv. og Math. Afd. (6) 1: 1–22. 1880. (Ethylene dichloride, p. 16, 19.) [Also Experimentelle Untersuchungen über die Refractionsconstante. Ann. Phys. Chem. (2) 11: 104–120. 1880.]

Refraction data are given.

PURGOTTI, A. (332)
SOPRA ALCUNI NUOVI ACIDI IPOSOLFONICI. Gaz. Chim. Ital. 22 (I): 416–426. 1892.

Ethylene dichloride and sodium thiosulphate react to form the ethylene ester, $C_2H_4=(S_2O_3Na)_2$.

RAMDAS, L. A. (333)
THE DISPERISON OF LIGHT AT LIQUID SURFACES. Indian Jour. Phys. 1: 199–234. 1927.

The dispersion of light at the surface of ethylene dichloride is measured.

RAO, I. R. (334)
DETERMINATION AND DISCUSSION OF LIGHT-SCATTERING DATA FOR 10 GASES AND 63 VAPOURS OF ORGANIC COMPOUNDS. Indian Jour. Phys. 2: 61–96. 1927.

Depolarization values of light scattered by ethylene dichloride are given. Its anisotropy is studied in the liquid and vapor states.

RASTELLI, G. (335)
SUL CONTEGNO DI ALCUNI FENILIDRAZONI SCIOLTI IN SOLVENTI ALOGENATI. Gaz. Chim. Ital. 54: 964–972. 1924.

The behavior of ethylene dichloride as a solvent for phenylhydrazone is studied. Violet color is formed in the reaction as when chloroform or other halogenated solvents are used.

REGNAULT, V. (336)
SUR LA COMPOSITION DE LA LIQUEUR DES HOLLANDAIS ET SUR UNE NOUVELLE SUBSTANCE ÉTHÉRÉE. Ann. Chim. et Phys. (2) 58: 301–320. 1835. [Also in Liebigs Ann. Chem. 14: 22–38. 1835.]

Investigations are made to confirm the work of Dumas, which showed ethylene dichloride to have the formula $C_8H_{16}Cl_8$ (or CH_2Cl), as against the work of Liebig, which showed the formula to be $C_8H_{15}Cl_8$. The density is found to be 1.256 at 12°; the boiling point 82.5°C. at a pressure of 756 millimeters; the vapor density, 3.45. The production of vinyl chloride by the action of alcoholic potash on ethylene dichloride is described.

——— (337)
RECHERCHES DE CHIMIE ORGANIQUE. Ann. Chim. et Phys. (2) 59: 358–375. 1835.

Ethylene dibromide and diiodide may be formed in a manner similar to that by which the dichloride is formed from ethylene and chlorine. Physical and chemical resemblances and differences are mentioned. Vinyl compounds are formed by the action of alcoholic potash.

——— (338)
DE L'ACTION DU CHLORE SUR LA LIQUEUR DES HOLLANDAIS ET SUR LE CHLORURE D'ALDÉHYDENE. Ann. Chim. et Phys. (2) 69: 151–169. 1838. [Also in Liebigs Ann. Chem. 28: 84–88. 1838.]

The method of causing the reaction and its products are described.

——— (339)
DE L'ACTION DU CHLORE SUR LES ÉTHERS HYDROCHLORIQUES DE L'ALCOOL ET DE L'ESPRIT DE BOIS, ET DE PLUSIEURS POINTS DE LA THÉORIE DES ÉTHERS. Ann. Chim. et Phys. (2) 71: 353–430. 1839. [Also in Liebigs Ann. Chem. 33: 310–344; 34: 24–52, 1840.]

The preparation of ethylene dichloride by the action of chlorine on ethylene, the products of its chlorination, and other relationships are discussed. Chlorine when it acts on ethyl chloride in the light (in the absence of a catalyst) gives ethylidene chloride and not ethylene dichloride.

——— (340)
RECHERCHES SUR LES CHALEURS SPECIFIQUES DES FLUIDES ÉLASTIQUES. Compt. Rend. Acad. Sci. [Paris] 36: 676–687. 1853. [Also in Jahresber. Chem. 1853: 80 (as Chlorelayl); and in Liebigs Ann. Chem. 88: 184–186. 1853.

The specific heat of ethylene dichloride is given.

REIS, M. A. VON (341)
DIE SPECIFISCHE WÄRME FLÜSSIGER ORGANISCHER VERBINDUNGEN UND IHRE BEZIEHUNG ZU DEREN MOLECULARGEWICHT. Ann. Phys. Chem. (2) 13: 447–465. 1881.

The specific heat of ethylene dichloride is determined. Comparative studies are made.

REX, A. (342)
ÜBER DIE LÖSLICHKEIT DER HALOGENDERIVATE DER KOHLENWASSERSTOFFE IN WASSER. Ztschr. Phys. Chem. 55: 355–370. 1906.

The vapor pressure of ethylene dichloride is found to be 20.6 mm., 36.6 mm., 61.0 mm., and 97.4 mm., at 0°, 10°, 20°, and 30°, respectively. One liter of water is found to dissolve 9.22 gm., 8.84 gm., 8.68 gm., and 8.90 gm. of ethylene dichloride at 0°, 10°, 20°, and 30°, respectively. Absorption coefficients are given also and used in applying Winkler's absorption law.

REYNOSO, A. (343)
ACTION DU PROTOCHLORURE DE CARBONE ET DE LA LIQUEUR DES HOLLANDAIS SUR L'ÉCONOMIE ANIMALE. Jour. Pharm. et Chim. (3) 17: 441. 1850.

Ethylene dichloride has an anesthetic action, the insensibility lasting longer than that caused by chloroform or ether. Ethylene dichloride is mentioned as deserving special consideration because of its pleasant odor.

RHOUSSOPOULOS, O. (344)
AETHYLENDICHINOIL- UND METHYLEN-DICHINOILSALZE. Ber. Deut. Chem. Gesell. 16: 879–880. 1883.

Ethylene dichloride (1 mol.) and quinoline (2 mol.) combine in a closed tube heated at 100° to form ethylene diquinoline hydrochloride.

——— and MEYER, F. (345)
UEBER DARSTELLUNG VON AETHYLENDIAMIN UND EINIGE SEINER EIGENSCHAFTEN. Liebigs Ann. Chem. 212: 251–256. 1882.

The interaction of ethylene dichloride and a large excess of ammonia when heated in a closed tube leads to the formation of ethylenediamine.

RICHARDS, T. W., and MATHEWS, J. H. (346)
THE RELATION BETWEEN COMPRESSIBILITY, SURFACE TENSION, AND OTHER PROPERTIES OF MATERIAL. Jour. Amer. Chem. Soc. 30: 8–13, 1908. [Also Ztschr. Phys. Chem. 61: 449–454. 1907–08.]

The following values are given: Compressibility ($\beta \times 10^6$), 61.5; boiling point, 83.7°; density 20°/4°, 1.2569; surface tension, 32.50; vapor pressure at 20°, 62.0.

——— STULL, W. N., MATHEWS, J. H., and SPEYERS, C. L. (347)
COMPRESSIBILITIES OF CERTAIN HYDROCARBONS, ALCOHOLS, ESTERS, AMINES, AND ORGANIC HALIDES. Jour. Amer. Chem. Soc. 34: 971–993. 1912.

Data and observations on the compressibility of ethylene dichloride are given.

RITZEL, A. (348)
GASLÖSLICHKEIT, KOMPRESSIBILITÄT, UND OBERFLÄCHENSPANNUNG. Ztschr. Phys. Chem. 60: 319–358. 1907.

The compressibility of ethylene dichloride at 20° is determined at various pressures and presented in tabular and graphic forms.

ROARK R. C., and COTTON, R. T. (349)
FUMIGATION TESTS WITH CERTAIN ALIPHATIC CHLORIDES. Jour. Econ. Ent. 21: 135–142. 1928.

Twenty-one aliphatic chlorides are tested. For the sake of comparison, previously published results of Cotton and Roark with ethylene dichloride-carbon tetrachloride mixture are included. A mixture of 3 volumes of ethylene dichloride and 1 volume of carbon tetrachloride is most promising as a general fumigant against insects which attack stored products.

——— and NELSON, O. A. (350)
MAXIMUM WEIGHTS OF VARIOUS FUMIGANTS WHICH CAN EXIST IN VAPOR FORM IN A 1,000-CUBIC-FOOT FUMIGATING CHAMBER. Jour. Econ. Ent. 22: 381–387. 1929.

At 32° F. under a pressure of 1 atmosphere, 8.6 pounds of ethylene dichloride can exist in the vapor phase in a 1,000-cubic-foot chamber. The amounts at higher temperatures are also given.

ROBIQUET, and COLIN. (351)
NOTE SUR L'HUILE DU GAZ OLÉFIANT. Ann. Chim. et Phys. (2) 2: 206–209. 1816.

A few properties of ethylene dichloride are given.

——— and COLIN. (352)
RECHERCHES SUR LA NATURE DE LA MATIÈRE HUILEUSE DES CHIMISTES HOLLANDAIS. Ann. Chim. et Phys. (2) 1: 337–356. 1816.

The action of chlorine on ethylene (hydrogène percarboné) is discussed. Physical properties and chemical reactions are given.

RÖHM UND HAAS AKTIEN-GESELLSCHAFT. (353)
VERFAHREN ZUM VERSEIFEN DER CHLORIDE DES ÄTHYLENS. French Patent 629204, issued November 7, 1927. [Original not seen. Abstract in Chem. Zentbl. (1) 1928: 845. 1928.]

Ethylene dichloride is saponified at a temperature up to 200° under pressure.

ROMBURGH, P. VAN (354)
SUR LA TRANSFORMATION DES CHLORURES ORGANIQUES EN IODURES AU MOYEN DE L'IODURE DE CALCIUM. Rec. Trav. Chim. Pays-Bas 1: 151–153. 1882.

When ethylene dichloride is heated in a sealed tube at 100° with calcium iodide only a small yield of ethylene diiodide is obtained.

ROSA, J. T. (355)
EFFECTS OF CHEMICAL TREATMENTS ON DORMANT POTATO TUBERS. Hilgardia 3: 125–142. 1928.

Ethylene dichloride at concentrations between 0.2 and 0.4 cubic centimeters per liter of space, with the exposure continued for 24 hours, proves very effective in reducing dormancy.

ROSANOFF, M. A., and EASLEY, C. W. (356)
ON THE PARTIAL VAPOR PRESSURES OF BINARY MIXTURES. Jour. Amer. Chem. Soc. 31: 953–987. 1909. [Also in Ztschr. Phys. Chem. 68: 641–683. 1909–10.]

The mixture ethylene dichloride-benzene is studied with regard to its partial vapor pressures. The index of refraction of ethylene dichloride is given as 1.44218 (25.2°).

ROUX, L. (357)
APPLICATION DE LA MÉTHODE AU CHLORURE D'ALUMINIUM A LA SÉRIE DE LA NAPHTHALINE. Ann. Chim. et Phys. (6) 12: 289–358. 1887. (Ethylene dichloride, p. 298.)

Silva's work (387) in preparing dibenzyl from benzene, ethylene dichloride, and aluminum chloride is recalled.

RUFF, O., and SCHILLER, E. (358)
ÜBER TANTAL-UND NIOBPENTAFLUORID, SOWIE ÜBER DIE REINDARSTELLUNG DER TANTAL-UND NIOBSÄURE. Ztschr. Anorgan. Chem. 72: 329–357. 1911.

Ethylene dichloride is obtained as an impurity in the preparation of tantalum pentachloride from tantalum pentoxide, carbon tetrachloride, and chlorine.

SABANEJEFF, A. (359)
ÜBER DAS VERHALTEN WEINGEISTIGER LÖSUNGEN ORGANISCHER HALOGEN-VERBINDUNGEN GEGEN ZINK. Ber. Deut. Chem. Gesell. 9: 1810. 1876.

Ethylene dichloride reacts with granulated zinc in alcoholic solution only with difficulty.

——— (360)
[ON THE BOILING POINTS OF HALOGEN DERIVATIVES OF ETHANE AND ETHYLENE.] Zhur. Russ. Fiz.-Khim. Obshch. 12: 48–56. 1880. [Abstract in Chem. Zentbl. 1880: 645. Also in Liebigs Ann. Chem. 216: 241–251. 1882.]

The boiling point of ethylene dichloride is given as 85° C. It is considered in a study of the differences in the boiling points of the corresponding chlorine derivatives of ethane and ethylene.

SACHANOV, A. (361)
ÜBER DIE ANOMALE ELEKTROLYTISCHE DISSOZIATION. Ztschr. Elektrochem. 20: 529–537. 1914.

The dielectric constant of ethylene dichloride is stated to be 10 (Walden). Salts in this solvent polymerize. This agrees with the conclusion that polymerization of salts is a general property of solvents with a small dielectric constant.

——— and RJACHOWSKY, N. (362)
[THE VISCOSITY OF LIQUID MIXTURES. I.] Zhur. Russ. Fiz.-Khim. Obshch. 46: 78–88. 1913. [Also in Ztschr. Phys. Chem. 86: 529–537. 1913–14.]

The viscosity of the ethylene dichloride-benzene mixture is studied.

——— and RYAKHOVSSKII, N. A. (363)
THE VICOSITY OF LIQUID MIXTURES. II. Zhur. Russ. Fiz.-Khim. Obshch. 47: 113–133. 1915.

The viscosity of the mixture acetophenone-ethylene dichloride is studied.

SACKUR, O. (364)
DER OSMOTISCHE DRUCK KONZENTRIERTER LÖSUNGEN VON NICHTELEKTROLYTEN. Ztschr. Phys. Chem. 70: 477–495. 1910. [Also published in part in 86 Jahresber. der Schles. Gesell. für Vaterländische Kultur, June 24, 1908.]

Values for the osmotic pressure of ethylene dichloride in solutions of benzene and of benzene in ethylene dichloride at 50° are given.

SCHIFF, R. (365)
UEBER DIE CAPILLARITÄTSCONSTANTEN DER FLÜSSIGKEITEN BEI IHREM SIEDEPUNKT. Ber. Deut. Chem. Gesell. 15: 2965–2975. 1882.

Physico-chemical data are given.

——— (366)
UEBER DIE MOLECULARVOLUMINA FLÜSSIGER SUBSTANZEN. Liebigs Ann. Chem. 220: 71–113, 278–334. 1883. (Ethylene dichloride, pp. 96, 328.)

The molecular volume of ethylene dichloride is determined and found to be 85.24; vapor density, 0.0587; density $\frac{9.8}{4}$, 1.2656; density $\frac{83.3}{4}$, 1.1576; boiling point 83.3° (749.0). Other data are given.

——— (367)
SULLE CONSTANTI CAPILLARI DEI LIQUIDI AL LORO PUNTO DI EBOLLIZIONE. Atti Accad. Lincei (Mem. Sci. Fis. Mat. Nat.) (3) 18: 449–486. 1883–84.)

Physico-chemical data are given and discussed.

——— (368)
UEBER DIE CAPILLARITÄTSCONSTANTEN DER FLÜSSIGKEITEN BEI IHREM SIEDEPUNKT. Liebigs Ann. Chem. 223: 47–106. 1884.

Physico-chemical data are given.

——— (369)
DEGLI EQUIVALENTI CAPILLARI DEI CORPI SEMPLICI. Gaz. Chim. Ital. 14: 368–447. 1884. (Ethylene dichloride, p. 432.)

Ethylene dichloride is one of a number of compounds considered in a study of the relation between capillary constants and chemical constitution.

SCHMIDT, H. W. (370)
BEITRAG ZUR FRAGE ÜBER DEN DURCHGANG DER β-STRAHLEN DURCH MATERIE. II. Phys. Ztschr. 11: 262–273. 1910.

Experimental results on the transmission of β-rays through ethylene dichloride are given.

SCHNEIDER, B. VON. (371)
UEBER DIE SCHMELZPUNKTE EINIGER ORGANISCHER VERBINDUNGEN. Ztschr. Phys. Chem. 19: 155–158. 1896; 22: 225–236. 1897.

The corrected melting point of ethylene dichloride is −36°.

——— (372)
DAS MECHANISCHE GLEICHGEWICHT DER ATOME ORGANISCHER VERBINDUNGEN ALS FUNCTION IHRER SCHMELZPUNKTE BETRACHTET. Chem. Ztg. 22: 69–70. 1898.

The difference in the melting points of ethylene dichloride and ethylidene dichloride is considered.

SCHÖNROCK, O. (373)
ÜBER DIE ELEKTROMAGNETISCHE DREHUNG DER POLARISATIONSEBENE IN FLÜSSIGKEITEN UND SALZLÖSUNGEN. Ztschr. Phys. Chem. 11: 753–786. 1893.

The specific magneto-optical rotation of ethylene dichloride is found to be 1.0043; the molecular magneto-optical rotation is found to be 5.518.

SCHORLEMMER, C. (374)
THE ACTION OF HYDROCHLORIC ACID ON ETHYLENE ALCOHOL. Jour. Chem. Soc. [London] 39: 143–144. 1881.

Ethylene glycol with an excess of fuming hydrochloric acid in a sealed tube when heated in a steam bath forms ethylene dichloride.

SCHULZE, A. (375)
DIE SPEZIFISCHE WÄRME BINÄRER GEMISCHE I. Verhandl. Deut. Phys. Gesell. 14: 189–210. 1912. [Also in Ber. Deut. Phys. Gesell. 10: 189–210. 1912.]

The specific heat of the mixture benzene-ethylene dichloride is studied. Values are given for different concentrations and temperatures. At 50° this mixture is an ideal one, having a straight vapor pressure curve and also a straight specific heat curve. At lower temperatures the curve goes below the straight line, indicating association of ethylene dichloride.

——— (376)
THEORIE DER SPEZIFISCHEN WÄRMEN VON BINÄREN FLÜSSIGKEITSGEMISCHEN. Phys. Ztschr. 13: 425–433. 1912.

The specific heat of the mixture benzene-ethylene dichloride at different concentrations at 50° C. is studied.

——— (377)
GENAUE DAMPFDICHTEBESTIMMUNGEN VON EINIGEN FLÜSSIGEN KOHLENSTOFFVERBINDUNGEN. Phys. Ztschr. 14: 922–926. 1913.

The vapor density of ethylene dichloride is determined, and the following data are reported: T=99.8° C.; density ($D \times 10_3$)=3.238 (observed), 3.234 (theoretical); molecular weight (M)=99.07 (observed), 98.95 (theoretical).

——— and HOCK, H. (378)
ZUR THEORIE DER BINÄREN GEMISCHE. DIE GEMISCHE: BENZOL-ÄTHYLENCHLORID UND BENZOL-STANNICHLORID. Ztschr. Phys. Chem. 86: 445–457. 1913–14.

It is shown that the mixture benzene-ethylene dichloride behaves as an ideal mixture from the general standpoint of the theory of solutions. Tables showing the vapor pressure and specific heat of this mixture at different concentrations and temperatures are given.

SCHULZE, F. A. (379)
ÜBER EINE DIE INNERE AUSDEHNUNGSARBEIT BEI ERWÄRMUNG VON FLÜSSIGKEITEN BETREFFENDE GESETZMÄSSIGKEIT UND ÜBER DAS VERHÄLTNIS DER SPEZIFISCHEN WÄRMEN VON FLÜSSIGKEITEN. Ztschr. Phys. Chem. 88: 490–505. 1914.

Calculations from formulas involving specific heat are made, and the values presented in tabular form.

SCHUSTER, F. (380)
THEORIE UND EIGENSCHAFTEN BINÄRER GEMISCHE. Ztschr. Anorgan. u. Allg. Chem. 159: 307–315. 1927.

The internal pressure curve of the system benzene-ethylene dichloride is studied.

SCHWERS, F. (381)
DÉRIVÉS HALOGÉNÉS ET CONSTANTE DE RÉFRACTION. Acad. Roy. Belg., Bul. Cl. Sci. 1912: 610–655.

The changes of density and of refraction constants of mixtures of ethylene dichloride and acetone and of ethylene dichloride and acetic acid occurring with changes in concentration are studied.

SENDERENS, J. B. (382)
DÉSHYDRATATIONS CATALYTIQUES DES COMPOSÉS ORGANIQUES. Bul. Soc. Chim. France (4) 3: 823–829. 1908. [Also in Compt. Rend. Acad. Sci. [Paris] 146: 1211–1213. 1908.]

Ethylene dichloride at 370° in the presence of alumina loses a molecule of hydrochloric acid and forms vinyl chloride (Éthylène chloré, $CH_2=CHCl$).

——— (383)
DÉSHYDRATATION CATALYTIQUE DES ALCOOLS PAR VOIE SÈCHE. Ann. Chim. et Phys. (8) 25: 449–529. 1912. (Ethylene dichloride, pp. 504, 505.)

Ethylene dichloride heated with some of the dehydrating agents (especially alumina and aluminum sulphate) decomposes at 400°.

SHARMA, RAM KRISHEN. (384)
SPONTANEOUS COMBUSTION OF ETHYLENE DURING THE PREPARATION OF ETHYLENE DICHLORIDE. Jour. Chem. Soc. [London] 125: 2676. 1924.

During the preparation of ethylene dichloride by passing ethylene into chlorine water, a periodic flash is observed at the point of entrance of the delivery tube, and a small quantity of very finely divided carbon is formed.

SIEMENS UND HALSKE AKT.-GES. (385)
VERFAHREN ZUR UMWANDLUNG NATÜRLICHE ODER KÜNSTLICHER KAUTSCHUKARTEN IN ANDERE KAUTSCHUKARTEN ODER IN GUTTAPERCHAÄHNLICHE MASSEN. German Patent 354344, issued January 23, 1920.

Ethylene dichloride is used as a dispersion medium.

——— (386)
VERFAHREN ZUR UMWANDLUNG NATÜRLICHER ODER KÜNSTLICHER KAUTSCHUKARTEN IN ANDERE KAUTSCHUKARTEN ODER IN GUTTAPERCHAÄHNLICHE MASSEN. German Patent 358729, issued January 29, 1920.

Ethylene dichloride is used as a dispersion medium.

SILVA, R. D. (387)
SUR LA SYNTHÈSE D'UN DIPHÉNYLPROPANE ET SUR UN NOUVEAU MODE DE FORMATION DU DIBENZYLE. Compt. Rend. Acad. Sci. [Paris] 89: 606–608. 1879.

Ethylene dichloride, benzene, and aluminum chloride react to form a dibenzyl compound.

——— (388)
SUR LES PRODUITS QUI SE FORMENT EN MÊME TEMPS QUE LE DIBENZYLE EN EMPLOYANT LA METHODE AU CHLORURE D'ALUMINIUM. Bul. Soc. Chim. France (2) 36: 24–26. 1881.

The study of the reaction of ethylene dichloride, benzene, and aluminum chloride is repeated, purified reagents being used.

SIMPSON, M. (389)
SUR LA FORMATION DE L'ACIDE SUCCINIQUE EN PARTANT DU CHLORURE D'ÉTHYLIDÈNE. Compt. Rend. Acad. Sci. [Paris] 65: 351–353. 1867. [Also in Liebigs Ann. Chem. 145: 373–376. 1868.]

It is shown that ethylidene chloride produces ordinary succinic acid, as does ethylene dichloride, and not isosuccinic acid. To explain this, it is stated that ethylidene chloride when heated with potassium cyanide is rearranged to ethylene dichloride.

SKIRROW, F. W. (390)
ÜBER DIE LÖSLICHKEIT VON KOHLENOXYD IN BINÄREN ORGANISCHEN GEMISCHEN. Ztschr. Phys. Chem. 41: 139–160. 1902.

The solubility of carbon monoxide in mixtures of carbon disulphide and ethylene dichloride of different concentrations is determined. Vapor pressures are measured. The solubility and surface tension curves are given.

SLATOR, A. (391)
THE CHEMICAL DYNAMICS OF THE REACTIONS BETWEEN SODIUM THIOSULPHATE AND ORGANIC HALOGEN COMPOUNDS. PART I. ALKYL HALOIDS. Jour. Chem. Soc. [London] 85: 1286–1304. 1904.

Ethylene dichloride reacts with sodium thiosulphate when boiled in a mixture of alcohol and water, forming the ethylene ester.

SMOLENSKI, K. (392)
STUDIES ON OBTAINING SOME CHEMICAL PRODUCTS FROM ETHYLENE AND FROM TECHNICAL GASES CONTAINING ETHYLENE. Przemsl Chemiszny 11: 146–182. 1927.

Ethylene dichloride is obtained by chlorination of the technical gases. Vinyl chloride is obtained from ethylene dichloride by boiling with sodium hydroxide. The kinetics of the saponification of ethylene dichloride to ethylene glycol with sodium carbonate and sodium formate in the presence of methyl alcohol are investigated.

SMYTHE, J. A. (393)
A MODIFIED CHLORINATION PROCESS. (PREPARATION OF ETHYLENE DICHLORIDE AND CHLORO-DERIVATIVES OF BENZENE.) Jour. Soc. Chem. Indus. 35: 1130. 1916. [Also in Brit. Assoc. Newcastle, 1916, Sect. B.]

Combination between ethylene and chlorine is brought about very readily in the presence of calcium chloride. When ethylene is kept in slight excess, the main product is ethylene dichloride, but some trichlorethane is also formed. The two compounds are easily separated by fractional distillation.

SOLONINA, W. (394)
[THE ACTION OF NITROSYL CHLORIDE ON AMINES OF THE FATTY SERIES. III. THE ACTION OF NITROSYL CHLORIDE ON PRIMARY DIAMINES.] Zhur. Russ. Fiz.-Khim. Obshch. 30: 606–632. 1898.

Ethylene dichloride is obtained from the action of nitrosyl chloride on ethylenediamine in xylol solution in the cold. Ethylene dichloride with sodium phenolate forms ethylenediphenylether.

SONNENSCHEIN, F. L. (395)
UEBER EINE NEUE VERBINDUNG DES RHODANS MIT AETHERIN. Jour. Prakt. Chem. 65: 257–260. 1855. [Also in Arch. Pharm. (2) 85: 1; and Pharm. Zentbl. 1855: 615.]

Ethylene thiocyanate is prepared by heating an alcoholic solution of ethylene dichloride and an equivalent amount of potassium thiocyanate to 100° in a closed tube.

SOROKIN, W. (396)
UEBER DAS VERHALTEN EINIGER HALOIDVERBINDUNGEN DES AETHYLENS UND PROPYLENS GEGEN JODWASSERSTOFF. Ztschr. Chem. (n. F.) 6: 518–520. 1870.

Ethylene dichloride with hydriodic acid will probably transpose to ethylene diiodide and hydrochloric acid.

SOUBEIRAN, E. (397)
SUITE DES RECHERCHES SUR QUELQUES COMBINAISONS DU CHLORE. Jour. Pharm. 18: 1–24. 1832. [Also Ann. Chem. 1: 272–295. 1832.]

The author believes the material obtained by the action of chloride of lime on alcohol to be represented by a combination of chlorine and ethylene (CH_2Cl_2), and to contain twice as much chlorine as ethylene dichloride.

SPINDLER, H. (398)
UEBER DEN AUSTAUSCH VON CHLOR, BROM UND JOD ZWISCHEN ORGANISCHEN UND ANORGANISCHEN HALOGEN-VERBINDUNGEN. Liebigs Ann. Chem. 231: 257–285. 1885.

The conversion of ethylene dichloride to the diiodide by means of calcium iodide is studied. Conversion to the diiodide is more complete from the chlorobromide than from the dichloride.

SPRING, W. (399)
SUR LE SPECTRE D'ABSORPTION DE QUELQUES CORPS ORGANIQUES INCOLORES ET SES RELATIONS AVEC LA STRUCTURE MOLECULAIRE. Rec. Trav. Chim. Pays-Bas Belg. 16: 1–25. 1897.

The absorption spectrum of ethylene dichloride is studied.

STAEDEL, W. (400)
UEBER DIE EINWIRKUNG VON CHLOR AUF AETHYLCHLORID. Ztschr. Chem. (n. F.) 7: 197–199. 1871.

Staedel repeats Regnault's investigation of the chlorine substitution products of ethyl chloride on a larger scale in the hope of verifying the formation of ethylene dichloride, but he does not succeed.

STAEDEL, W. (401)
ÜBER DIE CHLORSUBSTITUTIONSPRODUCTE DES AETHYLCHLORIDS. Ztschr. Chem. (n. F.) 7: 513–516. 1871.

Although chlorination of ethyl chloride produces ethylene compounds, it fails to produce ethylene dichloride.

——— (402)
UEBER REGELMÄSSIGKEITEN IN DEN SEIDEPUNKTEN DER GECHLORTEN AETHANE. Ber. Deut. Chem. Gesell. 11: 746–750. 1878.

Ethylene dichloride is one of a number of compounds used in a study of regularities in the differences shown in the boiling points of chlorinated ethanes.

——— (403)
DIE HALOGENSUBSTITUTIONSPRODUCTE DES AETHANS. Liebigs Ann. Chem. 195: 180–205. 1879.

A summary of the work on the chlorination of ethyl chloride, especially with respect to the question of the formation of ethylene dichloride, is given. Regnault first found that the chlorination of ethylene dichloride gave trichlorethane (Monochloräthylenchlorid).

——— (404)
DAMPFTENSIONEN HALOGENSUBSTITUIRTER AETHANE. Ber. Deut. Chem Gesell. 13: 838–841. 1880.

The vapor pressure of ethylene dichloride is studied. The average change in pressure for 1° C. between the pressures 400 and 1,060 millimeters is found to be 21.74 millimeters.

——— (405)
BEZIEHUNGEN ZWISCHEN SIEDEPUNKTEN UND SPECIFISCHEN VOLUMEN. Ber. Deut. Chem. Gesell. 15: 2559–2572. 1882.

The boiling points and specific volumes of ethylene dichloride at various pressures are determined and relationships shown.

——— (406)
DIE CHLORIERUNG DES ATHYLCHLORIDS. Jour. Prakt. Chem. (n. F.) 80: 303–304. 1909.

The author states that his original results obtained 40 years ago are correct. At that time he reported that chlorine and the vapor of ethyl chloride react instantly in direct sunlight and the product contains ethylidene chloride but not ethylene dichloride.

STÄHLER, A. (407)
EINIGE UMSETZUNGEN MIT KOMPRIMIERTEM AMMONIAK (UMSETZUNGEN BEI HÖHEREN DRUCKEN III). Ber. Deut. Chem. Gesell. 47: 909–913. 1914.

Previous studies on the reaction of ethylene dichloride and ammonia are reviewed. The reaction under higher pressures is studied. In the latter case no diethylenediamine is formed.

STEAD, G. (408)
ON THE SEPARATION OF SPECTRA IN COMPOUND GASES. Phil. Mag. and Jour. Sci. (6) 22: 727–733. 1911.

There is no difference spectroscopically between ethylene dichloride and ethylidene chloride. An electric discharge at low pressures produces initially the Swan spectrum at both electrodes, but in a short time chlorine lines and the ordinary hydrogen spectrum appear at the cathode, while carbon dioxide bands, together with a faint secondary hydrogen spectrum, is seen at the anode. Carbon is gradually deposited on the walls of the tube.

STEINDORFF, K. (409)
ÜBER DIE WIRKUNG EINIGER CHLORDERIVATE DES METHANS, ÄTHANS UND ÄTHYLENS AUF DIE HORNHAUT DES TIERAUGES. Albrecht von Graefes Arch. f. Ophth. 109: 252–264. 1922.

Ethylene dichloride exerts a paralyzing effect upon the nervous system. It has been known for some time that ethylene dichloride causes cornea troubles. A summary of the previous work is given. Upon the eye of the dog ethylene dichloride causes cornea troubles, the effects being induced by instillation, by the subcutaneous injection of relatively large doses, or by its use as an inhalation narcotic. Different animal species vary in susceptibility. Since ethylene dichloride irritates the air passages of man and often causes severe vomiting, it finds little use as an anesthetic.

STERN, O. (410)
BEMERKUNGEN ZU HERRN DOLEZALEKS THEORIE DER GASLÖSLICHKEIT. Ztschr. Phys. Chem. 81: 474–476 1912–13.

A comparative study is made of the solubility of carbon dioxide in a number of organic solvents, one of which is ethylene dichloride.

STOCK. A., and SOMIESKI, K. (411)
SILICIUMWASSERSTOFFE.. VIII. HALOGEN-ABKÖMMLINGE DES DISILANS, Si_2H_6, UND IHRE HYDROLYSE. Ber. Deut. Chem. Gesell. 53: 759–769. 1920.

The boiling point of ethylene dichloride is stated to be 84° C. It is compared to the boiling points of other chlorinated ethanes.

STRUTT, R. J. (412)
AN ACTIVE MODIFICATION OF NITROGEN, PRODUCED BY THE ELECTRIC DISCHARGE. v. Royal Soc. [London], Proc. Ser. A 88: 539–549. 1913.

Ethylene dichloride with active nitrogen yields hydrocyanic acid freely but not cyanogen. When chlorine is present, cyanogen chloride is formed.

SUNIER, A. A., and ROSENBLUM, C. (413)
THE LATENT HEAT OF FUSION OF NAPHTHALENE FROM NEW SOLUBILITY DATA. Jour. Phys. Chem. 32: 1049–1055. 1928.

The solubility of naphthalene in ethylene dichloride is determined in an effort to obtain a more definite indication of the latent heat of fusion of naphthalene from solubility data.

THIESS, K., and MÜLLER, C. J. (414)
(FARBWERKE VORM. MEISTER LUCIUS & BRÜNING). DARSTELLUNG VON DIPOLYOXYALKYLÄTHERN DER DITHIOALKYLENE. German Patent 405384, issued April 11, 1922.

Ethylene dichloride is used in the preparation of ethylene-chlorohydrin and ethylenedithiodiglycol.

THOMSEN, J. (415)
DIE NUMERISCHEN RESULTATE EINER SYSTEMATISCHEN UNTERSUCHUNG ÜBER DIE VERBRENNUNGSWÄRME UND BILDUNGSWÄRME FLÜCHTIGER ORGANISCHER VERBINDUNGEN. Ztschr. Phys. Chem. 52: 343–348. 1905.

The heat of combustion of ethylene dichloride under constant pressure is found to be 296.36 calories, and the heat of formation under constant volume is found to be 109.88 calories.

THORPE, T. E. (416)
ON THE RELATION BETWEEN THE MOLECULAR WEIGHTS OF SUBSTANCES AND THEIR SPECIFIC GRAVITIES WHEN IN THE LIQUID STATE. Jour. Chem. Soc. [London] 37: 141–225, 327–394. 1880.

The specific gravity, boiling point, and rate of thermal expansion of ethylene dichloride are determined, and the results are compared to those obtained by other observers. Specific gravity at 0°/4° is given as 1.28082, and boiling point at 760 millimeters as 83.5°. Specific volume is given as 85.34

——— and RODGER, J. W. (417)
ON THE RELATIONS BETWEEN THE VISCOSITY (INTERNAL FRICTION) OF LIQUIDS AND THEIR CHEMICAL NATURE. Royal Soc. [London] Phil. Trans. (A) 185: 397–710. 1894.

The relations between the viscosity of ethylene dichloride and its chemical nature are studied.

THOVERT, J. (418)
RECHERCHES SUR LA DIFFUSION DES SOLUTIONS. Ann. Phys. 2: 369–427. 1914.

The diffusion of ethylene dichloride in methyl alcohol and in benzene is studied.

TIMMERMANS, J. (419)
SUR LA PURIFICATION ET LES CONSTANTES PHYSIQUES DE QUELQUES LIQUIDES ORGANIQUES. Bul. Soc. Chim. Belg. 24: 244–269. 1910.

The boiling point of ethylene dichloride at 760 millimeters is found to be 83.70° ± 1; the density at $\frac{0°}{4°}$, 1.28238 ± 2.

TIMMERMANS, J. (420)
RECHERCHES SUR LE POINT DE CONGÉLATION DES LIQUIDES ORGANIQUES. Bul. Soc. Chim. Belg. 25: 300–327. 1911.

The following values for the freezing point of ethylene dichloride are given: −35.3° (Timmermans), −42.0° (Haase), −36.0° (Pictet, Altschul, Schneider).

——— (421)
L'ÉTUDE DE LA CONGÉLATION DES SOLUTIONS COMME MÉTHODE D'INVESTIGATION DE QUELQUES PROBLÈMES DE CHIMIE PURE. III. NOUVELLES RECHERCHES SUR LA RÈGLE DE SYNCRISTALLISATION DE BRUNI. Bul. Soc. Chim. Belg. 36: 179–190. 1927.

Mixtures of ethylene dichloride with both cis and trans modifications of dichloroethylene are studied in confirming Bruni's rule that of two stereoisomers (cis and trans) the trans isomer has the greater tendency to form mixed crystals with the corresponding saturated compound. Ethylene dichloride does not form mixed crystals with cisacetylene dichloride, but with the trans isomer it forms a continuous series of crystals. Ethylene dichloride and ethylene dibromide form with one another a continuous series of mixed crystals.

——— and MARTIN, F. (422)
TRAVAUX DU BUREAU INTERNATIONAL D'ÉTALONS PHYSICO-CHIMIQUES. III. ÉTUDE DES CONSTANTES PHYSIQUES DE VINGT COMPOSÉS ORGANIQUES. Jour. Chim. Phys. 25: 411–451. 1928.

Physical constants of ethylene dichloride are determined with high accuracy; boiling point 83.50°; melting point −35.5°; d_{15}, 1.26000; d_{30}, 1.23831; $n\frac{15}{D}$, 1.44759; viscosity at 15°, 887; viscosity at 30°, 730; molecular refraction, $n\frac{15}{D}$, 21.02; n is given for other wave lengths also. The results obtained by other authors are also given.

TINKER, F. (423)
CHLOROHYDROCARBONS; PURIFYING GAS. British Patent 108602, issued November 4, 1916.

Unsaturated hydrocarbons, including ethylene, are removed from the permanent gases obtained from oils by treatment with chlorine, while the reaction mass is cooled by means of a spray or films of cold inert liquid, preferably the cooled reaction product. Ethylene dichloride is among the products.

TIZARD, H. T., CHAPMAN, D. L., and TAYLOR, R. (424)
A METHOD FOR HALOGENATING HYDROCARBONS AND THEIR DERIVATIVES. British Patent 214293, issued May 15, 1924.

A method of preparing ethylene dichloride by the use of cupric chloride as the halogenating agent is described.

TOLLENS, B. (425)
UEBER DIE EINWIRKUNG VON NATRIUM AUF AETHYLIDENCHLORÜR. Liebigs Ann. Chem. 137: 311–316. 1866.

On heating, ethylidene chloride does not change to ethylene dichloride; it does, however, behave as the latter toward sodium and sodium hydroxide, since with sodium acetylide and with sodium it forms ethylene.

TOLLOCZKO, S. (426)
[ON THE CHLORINATION OF NATURAL PETROLEUM GASES. II. CHLORINATION UNDER THE INFLUENCE OF THE RAYS OF A MERCURY LAMP (ULTRAVIOLET LAMP).] Abhandl. Krakauer Acad. Wiss. 52: 307–316. 1913. [Original in Polish.]

Ethylene dichloride is among the products obtained in the chlorination of natural gas in an ultraviolet lamp

TRAUBE, I. (427)
ÜBER DEN ZUSAMMENHANG DER OBERFLÄCHENSPANNUNG MIT DEM BINNENDRUCK UND VAN DER WAALS' GRÖSSEN A. UND B. Ztschr. Phys. Chem. 68: 289–294. 1909–10.

Physico-chemical values are given.

TRAUBE, W., and WOLFF, M. (428)
ÜBER ALKYLIMIDO- DISULFONSÄUREN. Ber. Deut. Chem. Gesell. 53: 1493–1501. 1920.

The reaction of ethylene dichloride with potassium disulphonamid, $K.N:(SO_3K)_2$, forms tetrapotassium ethylenediaminetetrasulphonate, $(SO_3K)_2:N.CH_2.CH_2.N:(SO_3K)_2$.

TRONOW, B. (429)
[ACTIVITY OF THE HALOGENS IN ORGANIC COMPOUNDS IN RELATION TO THE ELECTROCHEMICAL CHARACTER OF THE RADICAL WITH WHICH THE HALOGEN IS BOUND.] Zhur. Russ. Fiz.-Khim. Obshch. 58: 1278–1301. 1926.

The activity of the halogen in ethylene dichloride in its reaction with pyridine is studied.

TURNER, B. B. (430)
ÜBER DIE DIELEKTRIZITÄTSKONSTANTEN REINER FLÜSSIGKEITEN. Ztschr Phys. Chem. 35: 385–430. 1900.

The dielectric constant of ethylene dichloride is found to be 10.9 at 18°. Ethylene dichloride is used in determining that of orthonitrotoluol.

TYRER, D. (431)
ADIABATIC AND ISOTHERMAL COMPRESSIBILITIES OF LIQUIDS BETWEEN ONE AND TWO ATMOSPHERES' PRESSURE. Jour. Chem. Soc. [London] 105: 2534–2553. 1914.

Constants (density at $0° = 1.28248$; boiling point at 760 millimeters = 83.45°), adiabatic and isothermal compressibilities of pure ethylene dichloride are determined and tabulated with other calculations.

UNION CARBIDE CO. (432)
PREPARATION OF ETHYLENE DICHLORIDE. Swiss Patent 92115, issued July 12, 1919.

Ethylene dichloride is prepared by the action of ethylene, either gaseous or liquid, on liquid chlorine.

VAN WINKLE, W. A., and SMITH, G. McP. (433)
A SIMPLE RAPID METHOD FOR THE DETERMINATION OF HALOGEN IN ORGANIC SUBSTANCES. Jour. Amer. Chem. Soc. 42: 333–347. 1920.

A simple, rapid, easily executed, and reliable combustion method for the determination of halogen in volatile organic substances is described in detail. Results obtained on the use of the method in the analysis of ethylene dichloride are shown.

VELEY, V. H. (434)
A MODIFIED FORM OF APPARATUS FOR THE DETERMINATION OF THE DIELECTRIC CONSTANTS OF NON-CONDUCTING LIQUIDS. Phil. Mag. (6) 11: 73–81. 1906.

A sample of ethylene dichloride with a boiling point of 83.71° C. ±0.15 at 757.1 millimeters (corr.) and a density of 4°/4° of 1.27536 (corr.) gives the value for the dielectric constant of 11.29 at 17°.

VILLARD, P. (435)
ÉTUDE EXPÉRIMENTALE DES HYDRATES DE GAZ. Ann. Chim. et Phys. (7) 11: 289–394. 1897. (Ethylene dichloride, pp. 294, 388.)

Ethylene dichloride forms a hydrate under a pressure of 100 atmospheres up to 18°.

VOLKMANN, P (436)
BEMERKUNGEN ZU DEN ARBEITEN DES HERRN R. SCHIFF ÜBER "DIE CAPILLARITÄTSCONSTANTEN DER FLÜSSIGKEITEN BEI IHREM SIEDEPUNKT," Liebigs Ann. Chem. 228: 96–111. 1885.

The capillary constant of ethylene dichloride is studied.

VOORHEES, V., and SKINNER, G. S. (437)
SOME NEW DERIVATIVES OF BARBITURIC ACID. Jour. Amer. Chem. Soc. 47: 1124–1127. 1925.

Some ethylene dichloride is formed in the preparation of ethylene diiodide from ethylene, iodine, and chlorine.

WALDEN, P. (438)
ÜBER DEN ZUSAMMENHANG DER KAPILLARITÄTSKONSTANTEN MIT DER LATENTEN VERDAMPFUNGSWÄRME DER LÖSUNGSMITTEL. Ztschr. Phys. Chem. 65: 257–288. 1909.

The relation between the capillary constants and the latent heat of vaporization of a number of solvents, including ethylene dichloride, is studied.

——— (439)
ÜBER DEN ZUSAMMENHANG DER OBERFLÄCHENSPANNUNG MIT DEM BINNENDRUCK UND DEN VAN DER WAALSSCHEN GRÖSSEN A UND B. Ztschr. Phys. Chem. 66: 385–444. 1909. (Ethylene dichloride, pp. 388, 397–398.)

Ethylene dichloride is one of the substances used in the study. Physicochemical calculations are made, and the internal pressure at the boiling point is found to be 1830 atmospheres.

——— (440)
BEITRÄGE ZUR KENNTNIS DER DIELEKTRIZITÄTSKONSTANTEN VON LÖSUNGSMITTELN. Ztschr. Phys. Chem. 70: 569–619. 1910.

Dielectric data for ethylene dichloride are given.

——— (441)
ÜBER DEN ZUSAMMENHANG ZWISCHEN DEM GRENZWERT DER MOLEKULAREN LEITFÄHIGKEIT UND DER INNERN REIBUNG. Ztschr. Phys. Chem. 78: 257–283. 1911–12.

Ethylene dichloride is one of the solvents for tetrapropylammonium iodide used in this study.

——— (442)
UEBER DAS ELEKTRISCHE LEITVERMÖGEN IN KOHLENWASSERSTOFFEN UND DEREN HALOGENDERIVATEN, SOWIE IN ESTERN UND BASEN ALS SOLVENTIEN. I. TEIL; II. TEIL. Bul. Acad. Imp. Sci. St. Petersburg (6) 7: 987–996, 1075–1102. 1913.

Ethylene dichloride gives solutions having a measurable electrical conductivity, consequently it is an ionizing medium. The dielectric constant for ethylene dichloride is found to be 10.5. Various determinations are made, and ethylene dichloride is compared with a number of solvents.

——— (443)
ÜBER DEN ZUSAMMENHANG ZWISCHEN ELEKTROLYTISCHER DISSOZIATION UND DIELEKTRIZITÄTSKONSTANTE DER SOLVENTIEN. Ztschr. Phys. Chem. 94: 263–294. 1920.

Two values (10.5 and 9.25) are given for the dielectric constant of ethylene dichloride. The calculated values for the Ostwald dissociation constant are given as 0.00018 and 0.00012; that found experimentally is 0.00014–0.00010.

——— (444)
ÜBER DEN MOLEKULARZUSTAND BINÄRER SALZE IN SCHWACH IONISIERENDEN LÖSUNGSMITTELN. BEITRÄGE ZUR SOLVOLYSE UND POLYMERIE. Ztschr. Phys. Chem. 94: 295–373. 1920. (Ethylene dichloride, p. 357, 363.)

Ethylene dichloride is one of the solvents considered in a study of the relation between the degree of polymerization of the salt molecule and the dielectric constant of the solvent. The dielectric constant of ethylene dichloride is given as 10.4.

——— (445)
ZUR KENNTNIS DER POLYMERIE GELÖSTER BINÄRE SALZE. Ztschr. Elektrochem. 26: 60–65. 1920.

Ethylene dichloride is one of a number of solvents used to study the rôle of the solvent in polymerism of dissolved binary salts. The degree of polymerism is inversely proportional to the dielectric constant, E, of the solvent. E is about 10.4 for ethylene dichloride.

——— ULICH, H., and WERNER, O. (446)
ÜBER DIELEKTRIZITÄTSKONSTANTEN VON ELEKTROLYTLÖSUNGEN. II. ALLGEMEINER ÜBERBLICK: EINFLUSS GELÖSTER SALZE AUF DIE DIELKTRIZITÄTSKONSTANTEN VERSCHIEDENARTIGER LÖSUNGSMITTEL. Ztschr. Phys. Chem. 116: 261–290. 1925.

The dielectric constant of ethylene dichloride is given as 9.96 at 20°.

WANKLYN, J. A., and THANN, C. VON. (447)
ÜEBER DIE EINWIRKUNG DES ZINKS AUF JODÄTHYLEN. Liebigs Ann. Chem. 112: 201–205. 1859.

In a closed tube, zinc does not react with ethylene dichloride either at ordinary temperature or that of the water-bath. Sodium does react with it when heated in warm water and when heated further to the melting point of sodium.

WEEGMANN, R. (448)
ÜBER DIE MOLEKULARREFRAKTION EINIGER GEBROMTER ÄTHANE UND ÄTHYLENE UND ÜBER DEN GEGENWÄRTIGENST AND DER LANDOLT-BRÜHLSCHEN THEORIE. Ztschr. Phys. Chem. 2: 218–240, 257–269. 1888.

The author obtains the following values for the specific gravity and indices of refraction: $d\frac{20}{4}=1.2501$; $\mu\frac{20}{\alpha}=1.44204$; $\mu\frac{20}{D}=1.44439$; $\mu\frac{20}{\beta}=1.45034$; $\mu\frac{20}{\gamma}=1.45532$. The specific refraction and molecular refraction are also given, and all the values are compared with Brühl's results.

WEISSENBERGER, G., SCHUSTER, F., and ZACK, O. (449)
STUDIEN ÜBER BINÄRE FLÜSSIGKEITSGEMISCHE. Ztschr. Angew. Chem. 39: 270–271. 1926.

Results of vapor-pressure measurements of mixtures of phenol and ethylene dichloride are given.

WESTWATER, W., FRANTZ, H. W., and HILDEBRAND, J. H. (450)
THE INTERNAL PRESSURE OF PURE AND MIXED LIQUIDS. Phys. Rev. (2) 31: 135–144. 1928.

Studies are made of the internal pressure of ethylene dichloride and of a benzene-ethylene dichloride mixture.

WILDE, P. DE (451)
SUR LA PRODUCTION DE L'ACÉTYLÈNE—NOUVELLES MÉTHODES. Bul. Acad. Roy. Sci. Lett. Belg. (2) 19: 91–94. 1865. [Also in Bul. Soc. Chim. France (2) 5: 172–174. 1866.]

Acetylene may be prepared by the action of heat on ethylene dichloride vapor.

——— (452)
NOTE SUR LA PRÉPARATION DE L'ACÉTYLÈNE. Bul. Acad. Roy. Sci. Lett. Belg. (2) 37: 71–73. 1874. [Also in Bul. Soc. Chim. France (2) 21: 415. 1874.]

The preparation of acetylene from ethylene dichloride is considerably facilitated by the use of calcium oxide or soda lime.

WILDERMANN, M. (453)
ÜBER DIE GESCHWINDIGKEIT DER EINWIRKUNG VON ALKOHOLISCHEM KALI AUF DIE HALOGENDERIVATE DER KOHLENWASSERSTOFFE DER FETTREIHE. ERSTE ABHANDLUNG—WILDERMANN, MEJER UND AISINMANN, SEMJON. Ztschr. Phys. Chem. 8: 661–676. 1891.

The action of alcoholic potash on ethylene dichloride is studied.

WINTHER, C. (454)
ZUR THEORIE DER OPTISCHEN DREHUNG III, IV, UND V. (BEITRÄGE ZUR ALLGEMEINEN LÖSUNGSTHEORIE I, II, UND III.) Ztschr. Phys. Chem. 60: 590–625, 641–705, 756–775. 1907. (Ethylene dichloride, p. 603.)

The internal pressure of ethylene dichloride in the neighborhood of 0° is found to be 2,063 atmospheres.

WÖHLER, F. (455)
UEBER DIE ZERSETZUNG MEHRERER CHLORMETALLE DURCH ÖLBILDENDES GAS. Ann. Phys u. Chem. (Poggendorff) 13: 297–299. 1828.

Ethylene dichloride is formed in the action of ethylene on antimony pentachloride and on cupric chloride.

WÖHLISCH, E. (456)

DAS WAHRE MOLEKULARVOLUMEN FLÜSSIGER ORGANISCHER VERBINDUNGEN IN SEINER ABHÄNGIGKEIT VON DER STRUKTUR DES MOLEKÜLS. Ztschr. Elektrochem. 27: 295–301. 1921.

Ethylene dichloride and ethylidene chloride are given as especially good examples bearing out the author's rule of the adverse behavior of the true and apparent molecular volumes and the relation between the true molecular volume and constitution. Data are given and discussed briefly.

WOHL, A., and BERTHOLD, E. (457)

ÜBER DIE DARSTELLUNG DER AROMATISCHEN ALKOHOLE UND IHRER ACETATE. Ber. Deut. Chem. Gesell. 43: 2175-2185. 1910.

Ethylene dichloride reacts with phenol and sodium hydroxide in aqueous solution to form ω-chlorphenetol (phenyl-β-chlorethyl ether, $C_6H_5 \cdot O \cdot CH_2 \cdot CH_2Cl$). The yield of 35 per cent is increased to 48.4 per cent if the reaction is carried out under pressure.

WOLFF, A (458)

VERFAHREN ZUR DARSTELLUNG VON ALKALISALZEN DER BRENZCATECHIN-ÄTHEROXYPROPANSULFOSÄURE. German Patent 258473, issued September 13, 1911.

The action of ethylene dichloride on sodium sulphite is mentioned.

WORLEY, R. P. (459)

THE SURFACE TENSION OF MIXTURES. PART II. MIXTURES OF PERFECTLY MISCIBLE LIQUIDS AND THE RELATION BETWEEN THEIR SURFACE TENSIONS AND VAPOUR PRESSURES. Jour. Chem. Soc. [London] 105: 273–282. 1914.

The vapor pressure-composition curve of mixtures of ethylene dichloride and benzene corresponds with the theoretical straight line. The surface tensions of the pure liquids and of three mixtures are determined, and the results submitted in tabular form. These indicate that there is close agreement in the properties of surface tension and vapor pressure of mixtures, in that the laws of each are obeyed.

WULF, P. (460)

BEITRÄGE ZUR KENNTNIS DER FRAKTIONIERTEN DESTILLATION. Chem. Zentbl. 1885: 817–818. 1885. (Abstract of inaugural dissertation June 26, 1885.)

Optical data for ethylene dichloride are given. Mixtures of ethylene dichloride and chloroform are separated by fractional distillation only with great difficulty.

WURTZ, A. (461)

NOTE SUR LA LIQUEUR DES HOLLANDAIS. Compt. Rend. Acad. Sci. [Paris] 45: 228–230. 1857. [Also in Liebigs Ann. Chem. 104: 174–175. 1857.]

The preparation of ethylene dichloride ($C_4H_4Cl_2$) from glycol ($C_4H_6O_2$) and phosphorus pentachloride is described, and the following equation is given: $C_4H_6O_4 + 2PhCl_5 = 2HCl + 2PhO_2Cl_3 + C_4H_4Cl_2$. Some of the relations of ethylene dichloride are discussed. The following formulas express the relation of ethylene dichloride to glycol: $C_4H_6O_4 + 2HCl = 2H_2O_2 + C_4H_4Cl_2$. The following formulas express the relation of ethylene dichloride to aldehyde chloride: $C_4H_4Cl_2 = HCl + C_4H_3Cl$.

——— (462)

MÉMOIRE SUR LES GLYCOLS OU ALCOOLS DIATOMIQUES. Ann. Chim. et Phys. (3) 55: 400–478. 1859. (Ethylene dichloride, p. 419–421, 429.)

Ethylene dichloride is formed by the action of phosphorus pentachloride on glycol and on ethylene oxide.

——— (463)

SUR L'OXYDE D'ÉTHYLÈNE. Compt. Rend. Acad. Sci. [Paris] 48: 101–105. 1859. [Also in Liebigs Ann. Chem. 110: 125–128. 1859.]

Dutch liquid is the chloride of olefiant gas. Phosphorus pentachloride converts ethylene oxide into ethylene dichloride. Relationships are given. The action of silver salts on ethylene dichloride is mentioned.

——— and FRAPOLLI. (464)

TRANSFORMATION DE L'ALDÉHYDE EN ACÉTAL. Compt. Rend. Acad. Sci. [Paris] 47: 418–421. 1858.

Ethylidene chloride is shown to be isomeric with ethylene dichloride.

YAJNIK, N. A., BHALLA, M. D., TALWAR, R. C., and SOOFI, M. A. (465)
DIE BEZIEHUNG ZWISCHEN DER VISKOSITÄT UND DEM DAMPFDRUCK BINÄRE GEMISCHE. Ztschr. Phys. Chem. 118: 305–317. 1925.

The observed and calculated viscosities of mixtures of benzene and ethylene dichloride of various concentrations at 17° and 50° are given.

——— SHARMA, R. K., and BHARADWAY, M. C. (466)
THE RELATION BETWEEN THE SURFACE TENSION AND VAPOR PRESSURE OF BINARY MIXTURES. Quart. Jour. Indian Chem. Soc. 3: 63–72. 1926.

Surface tension determinations at different temperatures are made on the mixture benzene-ethylene dichloride, and the relationship of its straight line curve to the vapor pressure curve determined by Zawidski is studied. This mixture has a straight proportionality. Volkmann's formula for calculating the surface tension is applicable.

ZANDER, A. (467)
UEBER DIE SPECIFISCHEN VOLUMINA EINIGER ALLYL-PROPYL-UND VERWANDTER VERBINDUNGEN. Liebigs Ann. Chem. 214: 138–193 1882. (Ethylene dichloride as Chlorelayl, p. 190.)

The specific volume of ethylene dichloride is given as 85.8–86.4, and the difference between it and that for acetylene dichloride is compared with other specific volume differences.

ZAWIDZKI, J. VON. (468)
ÜBER DIE DAMPFDRUCKE BINÄRE FLÜSSIGKEITSGEMISCHE. Ztschr. Phys. Chem. 35: 129–203. 1900. (Ethylene dichloride, p. 145, 148, 166, 167, 199.)

The indices of refraction and vapor pressures of mixtures of benzene and ethylene dichloride are determined.

ZHOUK, K. (469)
[ON THE QUESTION OF CRITICAL TEMPERATURE OF FLUIDS.] (From the unpublished manuscript of A. Nadejdine.) Zhur. Russ. Fiz.-Khim. Obshch. 14: 157–162. 1882. [Also in Beibl. Ann. Phys. Chem. 7: 678–681. 1883.]

The critical temperature of ethylene dichloride is found to be 289.3° C.

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